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BROMIDE INTOXICATION

BY

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The cumulative effect of drugs is a well-known phenomenon, and in prescribing certain medicines—for instance, digitalis—the signs of toxicity are kept constantly in mind. The cumulative action of bromide has not, however, always received the attention it deserves, with the result that bromide intoxication is by no means rare.

Bromide is one of the more commonly prescribed toxic drugs. A fairly comprehensive investigation of the prescriptions issued in 1928 under the national health insurance medical scheme showed *inter alia* that the drugs most commonly prescribed were, in the following order: (1) sodium bicarbonate ; (2) ammonium carbonate ; (3) sodium salicylate ; (4) tinct. nuc. vom. ; (5) potassium bromide ; with ammonium bromide and sodium bromide much lower in the list. About one out of every ten prescriptions contains bromide as a principal ingredient. Since the total number of prescriptions issued in 1928 was 52,000,000, the inference is that something like 5,000,000 prescriptions containing bromide were dispensed in that year under the insurance medical service. An analysis made by one of us this year of 200 consecutive prescriptions at each of three different chemists showed that bromide was the chief ingredient in one out of every seven prescriptions for internal use (prescriptions for internal use form approximately 80 per cent. of all prescriptions), potassium bromide being the form in which it was most commonly prescribed. These figures give some idea of the widespread use of bromides ; this prevalence is probably partly due to the fear of the barbiturates, and is likely to be increased rather than lessened by the recent changes in the Dangerous Drugs Act (see Case 3).

The fact that bromides may be toxic is well recognized, and most textbooks of pharmacology describe the physical and mental symptoms of bromism. The warning sign that is usually stressed is the skin eruption, particularly bromide acne. We have found skin lesions to be relatively rare, and it is significant that Craven[1] observed them only once in eight cases of severe bromide intoxication, while Sharpe[2] reports them as being present in only one out of his ten cases. It has been our experience that when a patient who is having bromide develops mental symptoms the possibility of intoxication is usually overlooked unless a definite rash is present.

It is difficult to give figures regarding the frequency of bromide intoxication, but data on this point are being collected. Some idea of the problem can be gathered from the fact that the cases quoted in this paper came under our care within a period of five months, and they are only a selection of the available material. In common with other observers, we have failed to find any clinical signs or symptoms that are peculiar to bromide intoxication alone, and the diagnosis must therefore ultimately depend upon the presence of the toxic symptoms, together with a raised blood bromide, the symptoms disappearing on the withdrawal of bromide and administration of sodium chloride.

Technique of Blood Bromide Estimation

In order to estimate the blood bromide use was made of Walter's test as modified by Hauptmann[3] and later by Dixon. This test has been in general use at the Central Pathological Laboratory of the London County Council Mental Hospitals Service for the past two years.

Two c.cm. of serum are delivered into a test tube and 4 c.cm. of water and 1.2 c.cm. of 20 per cent trichloracetic acid are added. After shaking well and allowing to stand for ten minutes the mixture is filtered through No. 1 Whatman 7 cm. filter paper into another test tube. Two c.cm. of the filtrate are then taken and 0.4 c.cm. of 0.5 per cent. gold chloride solution added in a special comparison tube. The colour produced by this mixture is then compared against a series of gold-bromide standard tubes by eye, or in the colorimeter against the nearest of them.

Preparation of standard solutions for serum: 1.45 grams of pure dry sodium bromide are dissolved in 1 litre of water to make a stock solution. The standard sodium bromide solutions made as the table indicates are corrected to eliminate the error due to absorption of sodium bromide in the precipitation of protein from serum.

0.5 c.cm.	of stock solution	diluted to	10 c.cm.	= 25 mg.	%
1.0 c.cm.	,,	,,	10 c.cm.	= 50 mg.	%
1.5 c.cm.	,,	,,	10 c.cm.	= 75 mg.	%
2.0 c.cm.	,,	,,	10 c.cm.	=100 mg.	%

etc. ranging up to 500 mg. per cent. of sodium bromide.

Five c.cm. of these standard bromide solutions are added to 1 c.cm. of 0.5 per cent. gold chloride and 1 c.cm. of 20 per cent. trichloracetic acid in the comparison tubes, usually a rack of fifteen tubes from 25 mg. to 375 mg. per cent. by 25 mg. steps being required. The above standards are so arranged that direct comparison gives the milligrams of sodium bromide percentage in the serum treated as described. Provided the tubes are hermetically sealed and kept in the dark they may be used for some months.

The test is a very simple one, and has been found sufficient for all clinical purposes, the results being accurate to 5 per cent. either way. The more accurate microtitration methods are not required when dealing with the problem of intoxication, since it is only when the blood bromide reaches levels of 50 mg. and upwards (normal is 0.5–2.5 mg.) that it begins to be of clinical importance.

Symptomatology and Case Records

The degree of intoxication varies greatly from case to case, and in our present state of knowledge any classification must necessarily be arbitrary. For the sake of convenience we have grouped our cases under three headings: fatal, severe, and mild.

1.—Fatal Intoxication

Bromides when introduced into the body replace the chlorides, the total blood halide remaining constant. In experimental work on animals Bernoulli[4] found that a 40 per cent. replacement in the blood of chlorides by bromides was fatal to rabbits. In the following case there was a blood bromide of 500 mg. per cent., which is equivalent to a 47 per cent. replacement of sodium chloride in the blood.

Case 1.—Mrs. A., aged 29, was referred to a psychiatric clinic on March 6th, 1936, by a general hospital, to which she had been admitted suffering from depression and insomnia. There was no history of previous mental symptoms, and her general health had been fair up to 1934, when she had "pneumonia." In 1935 she had bronchitis with pleurisy, and in February, 1936, "slight rheumatic fever," together with a recurrence of the pleurisy. On examination there were no signs of physical disease, and the diagnosis of "mild depression" was made. She was advised, however, to remain at the general hospital for a further period. This she did, and made an uneventful recovery, being discharged to a convalescent home on April 8th. During this illness the only drug she received was luminal, 1/2 grain o.n.

A week later she attended the clinic again as an out-patient, complaining of a recurrence of insomnia, and she was then put on mist. ammon. brom., 5 grains t.d.s. However, a relapse set in, necessitating her readmission to the same general hospital on April 25th, where, three days later, she was put on mist. tribromide, 30 grains t.d.s. She was seen again at the clinic on April 28th, when a diagnosis was made of "depression with hysterical features." One month later she was reported as "still in a very hysterical state, depressed, unable to stand, loses her voice." On May 30th she was "very depressed, delusional, and noisy." She became increasingly noisy, and was removed to the local observation ward on June 3rd in a condition thought to be "hysterical stupor." During the preceding six weeks she had received the bromides regularly, but no other medicine had been given excepting luminal, 2 grains, on May 31st and June 1st. On June 10th she was seen by one of us, and the diagnosis of bromide intoxication was made. At that time she was extremely ill and dehydrated. Temperature 100°; pulse 116. The skin was very dry, but there was no rash. The heart was not enlarged, the sounds were clear; blood pressure 120/85. Mentally she presented a typical picture of low muttering delirium, being disorientated and terrified by visual hallucinations. A blood bromide estimation gave a reading of 500 mg. per cent. Treatment by intravenous salt solution and the forcing of fluids was instituted, but, in spite of the blood bromide dropping to 420 mg. per cent., the patient died within forty-eight hours.

At the necropsy the heart was found to be small; the heart muscle was flabby and showed some myocardial degeneration, not of recent origin. There were some old pleural adhesions, and the lungs showed a slight terminal hypostatic pneumonia; there was also a recent cystitis.

Describing bromism Cushny[5] states: "The symptoms generally disappear on the withdrawal of the drug, but in his reduced condition the patient is liable to infectious disease, and in a number of cases of chronic bromide poisoning the immediate cause of death has been an attack of bronchitis or pneumonia." In the previously described case, although a mild terminal infection was present, we feel that death was due to bromide overdosage. Although death directly due to bromide is rare, Bunbury and Wagner[6] mention two cases. These investigators, studying the incidence of bromism among psychotic patients, examined 1,000 routine admissions to the Colorado Psychopathic Hospital, and found that seventeen of the patients were admitted purely on account of bromide intoxication. Two of these patients died, and the authors state that they "feel that in these two cases death was due to the indiscriminate use of bromides only."

Even if a direct bromide death is quite exceptional, the intoxication may often contribute to the fatal termination. We have recently seen an old lady become semi-comatose (with a blood bromide figure of 360 mg. per cent.) and then rapidly succumb to bronchopneumonia before the drug could be eliminated. Bunbury and Wagner[6] mention four cases that died of cardiac decompensation, in which they felt that the excitement due to the bromide delirium had been an important contributory cause of the patients' death through placing an undue strain on an already weakened heart.

2.—Severe Intoxication

In this group either the mental or the physical symptoms may predominate. In evaluating the former it is important to know the patient's mental state before receiving bromide. If bromide intoxication is superimposed on any other mental illness it tends to give rise to a mixed picture, which often simulates schizophrenia. In the absence of any pre-existing psychosis it is usually a delirium or confusional state that is produced, with hallucinations and varying degrees of disorientation. These toxic states frequently necessitate the patient being removed to the observation ward or mental hospital. The common physical signs of intoxication are the dry skin, furred tongue, tremulous hands, slurred speech, and unsteady gait. The gag reflex tends to be lost early. Whether the mental or physical symptoms preponderate in any given individual would appear to depend upon the underlying constitution and personality of that individual.

The second case illustrates bromide intoxication arising in a patient admitted to a general medical ward for investigation of an enlarged thyroid.

Case 2.—Miss B., aged 42, was admitted on March 17th, 1936. On physical examination the thyroid was found to be enlarged, but no exophthalmos was present. The pulse rate was 92. The heart was not enlarged. The medical consultant found "no marked toxicosis." The patient's mental state was normal, and there was no previous history of nervous or mental symptoms. She was put on mist. tribromide, 30 grains t.d.s., on admission, which was later reduced to twice daily. Five weeks later (on April 22nd) she began to complain of dizziness, and was noted as being "hysterical and delusional." (At this time the basal metabolic rate was +14.) On May 12th she was seen by one of us, and was found to be confused, partially disorientated, and to have delusions that the other patients were talking about her. Physical examination revealed a coarse tremor of the hands and an unsteady gait. She had no bromide rash. Bromide intoxication was suspected, and her blood bromide figure was found to be 270 mg. per cent. The bromide was discontinued and salt given. She made a rapid improvement, was discharged on May 29th, and has remained well since.

The third case illustrates a more severe intoxication, occurring in a patient who had recently substituted bromide for medinal to overcome sleeplessness.

Case 3.—Miss C., aged 64, a school teacher, was admitted to the Maudsley Hospital on July 10th, 1936, in a state of great restlessness and confusion. She had no previous history of mental or nervous symptoms, and her memory was unimpaired. She had occasionally taken medinal for insomnia, but since May, 1936, when the sale of this drug was further restricted under the Dangerous Drugs Acts, she started to take sedobrol, for which no prescription was required. Each cube of sedobrol contains 17 grains of sodium bromide. The cubes were pleasant to suck, and she would on occasion take them during the day. She remained in normal health until about June 19th, when she started to have difficulty in remembering words. This increased, and on July 1st she was forced to stop work. During the week following she became increasingly restless and confused, and was terrified by visual and auditory hallucinations.

On admission she appeared toxic. Temperature was normal, pulse 100. Arteries slightly thickened; heart not enlarged; blood pressure 122/75. No skin lesions were present. Examination of the nervous system revealed sluggish pupils,

exaggerated deep reflexes, coarse tremors of the fingers, slurred speech, unsteady gait, Rombergism, and absent palatal reflex. There was incontinence of urine, but examination of the urine was negative. Examination of the blood showed a normal blood urea percentage and a blood bromide of 290 mg. per cent. The mental state showed great confusion and restlessness (she tried to climb a tree in the garden); she was disorientated for time and place; visual hallucinations were present by day, but more marked at night. She was placed on salt at once, and within forty-eight hours of admission showed definite improvement. On July 21st the blood bromide was 150 mg. per cent. At that time, although much improved physically and although the hallucinations had ceased, she was still suspicious and slightly confused. Thereafter her progress became more rapid, and by August 7th she was well excepting for slight physical weakness and a mild feeling of depression. Her blood bromide had dropped to 60 mg. per cent.

3.—Mild Intoxication

There is, finally, a very important mild toxic group, in which the symptoms are largely subjective and where the taking of a mental status may reveal little out of the ordinary. The patient, however, feels tired or weak, is "not his old self," or is "unable to concentrate"; complains of loss of appetite, failing memory, or broken sleep. These symptoms quickly clear up when the bromide is eliminated from the system. The next case is quoted to illustrate this group.

Case 4.—Miss D., aged 24, factory hand. Treated at hospital for hysterical fainting attacks. She first attended the out-patient department on May 28th, 1935, and continued to attend regularly until January, 1936. Her condition showed little change. On January 8th, 1936, she was first put on bromide, 5 grains t.d.s., which on February 8th was increased to 20 grains t.d.s. On February 26th she became puffy under the eyes and very pale, and her mother said she had become depressed and more bad-tempered. Her appearance suggested nephritis, but, except for a trace of albumin, investigations were normal. On March 18th she complained that she was losing her memory; when walking into shops she would forget things and have to walk out. Her conduct at home was becoming more erratic. Bromide intoxication was not thought of at this time, and it was only on carrying out an investigation on bromide levels in the out-patient department that it was found that her blood bromide was 310 mg. per cent. Removal of bromide and substitution of salt relieved these symptoms, her memory improved, and the depression vanished. The physical appearance suggestive of nephritis completely cleared up. She still attends the out-patient department in about the same condition as at her first visit.

Toxic Threshold

In our experience certain types of patients would appear to be especially susceptible to intoxication. Patients with arteriosclerosis, anaemia, impaired renal efficiency, or organic heart disease are more likely to show early evidence of toxicity. In general, the older the patient the greater the liability to intoxication, so that 150 mg. per cent. of blood bromide is significant in a man aged 50, while it could probably be ignored in a man aged 22. There is, however, a large "unknown" factor, for although the normal level is under 3 mg. per cent., yet it can sometimes be raised to 200 mg. without evidence of serious toxicity, and levels of over 350 mg. per cent. have been recorded without symptoms being observed. Owing to this wide variation of level at which toxic features appear it is impossible to give a definite toxic threshold that would apply to all cases, but it is our opinion that levels of under 100 mg. per cent. can usually be ignored; that in the range from 100 to 200 mg. per cent. symptoms are likely to appear in elderly patients or in those with impaired cardiovascular or renal efficiency; that levels of over 200 mg. per cent. produce symptoms in most cases. It is rare for a patient to be able to tolerate a blood bromide of 300 mg. per cent. without ill effect.

The following case illustrates a severe intoxication in a man with arteriosclerosis with a blood bromide of only 190 mg. per cent.

Case 5.—Dr. X., aged 55, a medical man, was admitted to the Maudsley Hospital on July 7th, 1936, for a confusional state. During the war he had had a nervous breakdown, but made a good recovery and had been at work steadily since. He took small doses of bromide for insomnia, but his general health had been very good excepting for a tendency to a blood pressure of about 200 mm. On June 2nd he was involved in a motor accident, and was dazed for an hour and a half with complete amnesia for most of this period; he also received injuries to the face, jaw, and back. He was able, however, to continue his work, and two days after the accident attended a medical meeting and a Masonic dinner. Six days after the accident he was *x*-rayed, owing to persistent pain in the shoulder and jaw, and was found to have fractures of the scapula and mandible. He was now put to bed and given bromide, 15 grains t.d.s., with an occasional extra dose at night. His condition rapidly changed: he became depressed and suffered from nightmares; during the day he had palpitations; the headache, present since the accident, was more severe, so that he had to give up all work. Photophobia developed, and his vision for colour became disturbed. His room had to be darkened. Five days previous to admission he began to experience alarming hallucinations, but retained sufficient insight to view these phenomena with objective curiosity. Bromide at this time had been taken for a period of one month.

On admission he was dull and confused. His sense of temporal perception was impaired, so that interviews with the doctor were either forgotten or misplaced in time. Hallucinations persisted. Examination of the nervous system was negative. There was no skin rash. The diagnosis of bromide intoxication was made, and the blood bromide level was found to be 190 mg. per cent. Treatment with sodium chloride, 50 grains four-hourly, and ample fluids produced a rapid amelioration of his symptoms. Medinal was substituted for the bromide to ensure sleep. In six days the hallucinations had completely disappeared and the blood bromide level had fallen to 75 mg. per cent. Eleven days after admission he felt sufficiently well to leave hospital and go to a large medical conference. The depression had been replaced by a mild euphoria, and on his return to London he reported residual symptoms of fatigue and a certain difficulty in concentration, probably the effect of the concussion and the arteriosclerotic complications. His blood pressure while in hospital was 170.

The severity of the intoxication in this case was probably due to the accompanying arteriosclerosis, since in many individuals a blood bromide of 190 mg. per cent. can be tolerated with little distress.

Therapeutic Considerations

Bromide is used chiefly in the treatment of epileptics, psychotics, and neurotics. A discussion of the treatment of epilepsy is outside the scope of this paper. With regard to patients in mental hospitals, it is the authors' opinion that it is possible and preferable to use methods other than that of prescribing large doses of bromide to obtain the necessary relaxation and rest. That bromide tends to be the regular "diet" of the neurotics was brought out very clearly by estimating the blood bromides of fifty consecutive admissions to the Maudsley Hospital—an analysis of these figures has been published elsewhere.[7] It is difficult to escape the conclusion that in many cases bromides are given as a routine measure without any realization of the possible ill effects on the patient.

It is beyond dispute that a considerable number of "nervous" cases do benefit from taking bromide. It is difficult to delimit this group, but it probably comprises chiefly those in whom there is temporary increase in anxiety, and where there is reason to believe that outside

events are playing a prominent part in causing it. Menopausal conditions and certain cases of sexual excitability also appear to be particularly helped by bromide, as are cases in which there is much irritability.

Bromide acts by replacing the chlorides in the body, the rate of substitution depending upon the quantity of bromide given, the fluid and chloride intake, and the renal efficiency of the individual. As the salt intake varies from individual to individual, so the amount of bromide remaining in the body after a standard dose also varies. If 50 grains of bromide are given to one person who is on a low salt diet and has a small fluid intake the blood bromide at the end of twenty-four hours will be appreciably higher than when the same amount of bromide is given to a patient who is on a normal diet. Therefore prescribing bromides without knowing the chloride–fluid intake is tantamount to prescribing an indefinite quantity of bromide. This, in part, explains why certain patients, receiving 10 grains of bromide three times a day, develop toxic symptoms in four to five weeks, while others can take the same dose for twelve months and benefit from it. It is difficult, therefore, to lay down rules as to dosage for any given individual. This must be arrived at by observing the effect of varying amounts of the drug.

The treatment of bromide intoxication when established or suspected is a simple procedure. The bromide is immediately stopped, large quantities of fluid, preferably normal saline, are given by the mouth, and sodium chloride, 20 to 40 grains, is administered four-hourly. Figures given in a previous paper by one of us[7] showed that when no salt was given relatively high amounts of bromide were still present in the blood of patients one to three months after the medicine had been discontinued.

Conclusion

As a result of our investigations we have come to realize how little is known at present of the precise indications for bromide therapy and the best methods of employing it. We do not wish to appear to overstress its dangers nor to undervalue its use. However, within the last year three doctors have been admitted to the Maudsley Hospital suffering from bromide intoxication, none of whom had appreciated the true cause of their illness through ignorance of the cumulative effect of this drug. This and other evidence suggests that throughout the country there are many similar cases being overlooked, resulting in a preventable quota of admissions to mental hospitals and much chronic ill-health.

Summary

1. Figures are quoted to illustrate the widespread use of bromides.

2. The toxicity of bromides is discussed.

3. A simple test for estimating bromide in the blood is given.

4. Symptoms and signs of fatal, severe, and mild intoxication are described and illustrated by case records.

5. Conditions predisposing to intoxication are suggested. The toxic threshold is discussed.

6. Therapeutic considerations are briefly considered.

Our thanks are due to Sir Frederick Menzies and Dr. E. Mapother for permission to publish the cases, also to Dr. Golla and the staff of the Central Pathological Laboratory of the London County Council, Mental Hospitals Department, who very kindly did the chemical tests.

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DIABETES MELLITUS IN CHILDHOOD*

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The following is a summary of the cases I have seen personally during the last ten years at the Hospital for Sick Children, Great Ormond Street.

TABLE I

	Boys	Girls	Total
Number of cases	44	27	71
Deaths	4 (9 per cent.)	6 (22 per cent.)	10 (14 per cent.)
Left clinic	—	—	11*
Family history of diabetes	8 (18 per cent.)	8 (30 per cent.)	16 (23 per cent.)

*Seven of these are attending other clinics and were well when last heard of.

Diagnosis

The symptoms in children are in most cases the classical ones—thirst, polyuria, and wasting. Usually only one to four weeks elapse between apparent normal health and the appearance of clinically unmistakable disease; in some, however, the onset is more gradual, and a history of lack of well-being for several months before the onset of the typical symptoms may be obtained. The common complaints in this period have been lassitude, a stationary or decreasing weight, and occasionally enuresis; in one patient typical symptoms appeared within a week of an attempt to cure this lassitude by large doses of dextrose. Two patients who were in hospital for other reasons were found on routine examination to be passing sugar. Neither had any symptoms at the time; both have since developed into typical cases.

It is obviously incapable of proof, but I believe that some of these patients, if given a correctly balanced diet before the onset of symptoms, could be prevented from developing the disease for many years. It is therefore wise to test the urine in all cases showing debility and failure to gain weight. In a certain number sugar will be found, and it will be necessary to investigate further. The dextrose tolerance test, repeated if a doubtful or unusual type of response is obtained, will usually prove diagnostic. It is necessary to continue the test for three hours, as in some cases the only abnormality is a failure to return to normal within that time. The urine should of course be examined simultaneously to exclude a low renal threshold for sugar. It is often sufficient to give the dose of dextrose to the fasting child and to estimate the blood sugar two hours later. If it be below 0.12 gram per 100 c.cm. it is safe to exclude diabetes; if it is higher a full investigation will be necessary.

Diet

In children the aim of treatment is twofold: first, to enable the child to be happy, active, and healthy, and secondly, to prevent the progress of the disease. The first is relatively simple, but the second is difficult and often impossible.

Diet is still the most important factor in treatment. It must be sufficient to allow normal activity and growth but any excess food above this is deleterious. There is no satisfactory formula whereby the caloric requirement can be calculated for any given child. The following table shows the average calorie intake which in the children in this series has allowed normal growth.

*Read in the Section of Diseases of Children at the Annual Meeting of the British Medical Association, Oxford, 1936.

TABLE II.—*Minimal Calorie Intake allowing Normal Growth in Diabetic Children*

Age	Range	Average	Holt's Average Normal
2	1,104–1,243	1,120	1,123
3	1,084–1,375	1,175	1,253
4	1,058–1,374	1,200	1,337
5	1,225–1,472	1,360	1,450
6	1,232–1,511	1,400	1,560
7	1,568–1,638	1,460	1,705
8	1,330–1,647	1,515	1,869
9	1,307–1,871	1,580	2,046
10	1,314–1,936	1,610	2,272
11	1,425–1,976	1,660	2,512
12	1,496–2,054	1,750	2,801

It has been amply shown that a low carbohydrate intake reduces the carbohydrate tolerance of a normal subject, and that some diabetics react in a similar way. All the children I have investigated have shown an improved carbohydrate tolerance on increasing the carbohydrate-fat ratio in the diet. Provided that the calorie intake is unchanged, altering this ratio from about 0.5-0.6 to 2–2.5 (which may entail increasing the carbohydrate intake by 80 to 120 grams a day) makes little, if any, difference in the demand for insulin ; occasionally, indeed, less insulin is required. Table III shows the effect of increasing the carbohydrate and decreasing the fat in the diet, first with no increase in the total calories, secondly with an increase.

TABLE III

A.—*No Increase in Total Calories*

	Grams Carbohydrate	C.F Ratio	Insulin	Change in Calories
Before	59	0.5	40	
After	154	2.1	44	None
Before	68	0.5	60	
After	177	2.3	56	None
Before	82	0.6	42	
After	197	2.5	42	None
Before	79	0.7	24	
After	185	2.5	25	None
Before	101	0.85	29	
After	182	2.4	22	None
Before	71	0.7	8	
After	152	2.3	8	None
Before	61	0.7	16	
After	122	2.0	16	None

Summary.—4, no change in insulin; 1, increase 4 units; 2, decrease 4 and 7 units.

B.—*Increase in Total Calories*

Before	70	0.6	22	
After	180	2.6	28	80
Before	58	0.5	30	
After	164	2.3	34	25
Before	66	1.0	24	
After	146	2.6	28	340
Before	85	0.8	20	
After	142	1.6	19	90
Before	65	0.55	36	
After	179	2.6	40	40
Before	54	0.5	48	
After	159	2.2	50	150
Before	70	0.55	23	
After	185	2.5	26	55
Average increase			3	110

Summary.—All but one showed increase in insulin with increase of calories.

The diet now prescribed is almost the same as that of a normal child, except that it is necessary to know the composition of the food to be eaten. The use of sugar has also to be restricted. The usual household foodstuffs are utilized. The older diabetic foods, with their low carbohydrate, high fat, and protein contents, find no place in the modern diet. There is a place for attractive foods of standard composition, such as certain brands of ice-cream and chocolate the analysis of which is revealed and guaranteed by the manufacturers. If they are used they must of course displace articles of corresponding food value in the diet.

Insulin Treatment

Insulin must be given in sufficient amount to remove all symptoms of the disease. It may be argued that it is not necessary to do more than this ; but my experience has been that if the blood sugar is consistently high, even with no symptoms, the disease increases in severity at a greater rate than in those cases in which a more or less successful attempt has been made to keep the blood sugar within the normal range. In some cases in which the blood sugar has been maintained at a satisfactory level the disease appears to have remained stationary, even permitting the annual increase in diet to be made without increasing the insulin ; no permanent improvement has, however, been observed.

In children there may be an extraordinary degree of instability of the blood sugar, as is shown in Table IV.

TABLE IV.—*Variation in the Blood Sugar during the Day*

	Blood Sugar (Grams per 100 c.cm.)			
Time	Case 1	Case 2	Case 3	Case 4
12 noon	0.174	0.049	0.132	0.218
2.30 p.m.	0.182	0.122	0.045	0.167
5 p.m.	0.039	0.370	0.140	0.097
8 p.m.	0.240	0.314	0.356	0.360
11 p.m.	0.366	0.205	0.400	0.316

Insulin given at 7.30 a.m. and between 3.30 p.m. and 4.30 p.m. Breakfast at 8 a.m., dinner at 12 noon, tea at 3.45 p.m. or 5 p.m., supper at 6..0 p.m.

Unless very large doses have to be administered it is kinder to avoid three injections a day. Therefore, to enable the needful dose of insulin to be given and at the same time to prevent hypoglycaemic symptoms some four or five hours later on, it is necessary to order small intermediate meals. These take the form of a mid-morning lunch, usually the school milk (1/3 pint), with a biscuit or an apple, and a rather late supper. This requires a much greater rigidity in the composition of the individual meals than is needed in the adult. For this reason I have been afraid to try the modern " free " or unrestricted diet that is being advocated, except in two older children who have passed the unstable age. In these it is working satisfactorily.

The recent introduction of protamine insulinate by Professor Hagedorn may help to solve this problem, since the rate of absorption of the insulin has been considerably retarded. It is now being tried out in some of my cases. In one it has been a remarkable success ; in the remainder the improvement has not been very marked.

Home Care

Almost any type of diet and treatment is successful in the steady routine of a hospital ward. The acid test is the return to home life. I do not regard as successfully treated any child who is not able to live a normal life at home and at school. He should work, play

games, swim, and run with the best. I have, however, to admit of one or two exceptions. Owing to the very general tendency to low blood sugar just before the midday dinner, strenuous exercise at that time must be forbidden, as also is cycling in traffic at all times when hypoglycaemia is possible, since loss of balance is often an early symptom. It is important to minimize the psychological effect on children of knowing that they have diabetes. By showing them that when they take the diet and insulin they have made themselves normal, and, just as important, by persuading the rest of the family to treat them as if they were normal, much good can be done, and in most cases a sense of inferiority does not develop.

Hypoglycaemia

Hypoglycaemic symptoms vary to an even greater degree in children than in adults. As is well known, the blood sugar level can fall much lower in children without producing symptoms than in adults, the usual level at which symptoms are shown being about 0.05 gram per 100 c.cm., though this is subject to much variation from case to case and from time to time in the same patient. Occasionally symptoms are shown at levels higher than normal—in one child at as high a level as 0.16 gram per 100 c.cm.

In addition to the usual hunger, shakiness, and hot or cold sweats, with subsequent drowsiness and coma, children often show fretfulness, tearfulness, or bad temper as early signs. Abdominal symptoms—colicky pain, nausea, vomiting, or diarrhoea—are not infrequently noted. Sometimes there are no warning symptoms and the child abruptly becomes unconscious ; an observer, however, can usually see a change in the child's expression, together with pallor of the face several minutes before. The treatment is, of course, to give sugar by mouth ; it is rare for more to have to be done. However, it is not wise to leave the child too long in the hypoglycaemic state. In one case in which the duration of hypoglycaemia was about twelve hours a further forty-eight hours elapsed before consciousness was regained, and normal mentality did not return until nearly six months had passed. A dose of 0.5 c.cm. of 1 in 1,000 adrenaline, or 10 units of pituitrin (pitressin) may have to be given, and occasionally intravenous glucose.

Some Complications

Some diabetic children suffer from periodic attacks of nausea and vomiting, with or without abdominal pain. These attacks are sometimes the outcome of hypoglycaemia. Hypoglycaemia has been shown to cause an outpouring of adrenaline, and I visualize these children as being unduly responsive to the effects of adrenaline on the alimentary tract. In some, the effect passes off with no untoward symptoms ; in others, a ketosis occurs, due both to the adrenaline itself and to the fasting entailed by the symptoms. This may bring about a typical attack of diabetic coma within as short a time as eighteen hours. Sometimes the attacks are due to excitement, or to a long journey, or to a focus of infection, thereby showing a close kinship to the periodic vomiting or bilious attacks of other children.

The condition is controlled easily in a few hours if treated at once, preferably at home. The treatment consists in giving sugar by mouth (lemonade is the easiest form) and sufficient insulin to keep the urine nearly sugar-free. The first solid meal should be easily digestible, and need not conform to the diet. As soon as the appetite returns, the normal diet is resumed. Sodium bicarbonate alone or with infusion of gentian is helpful in controlling the nausea, and will sometimes ward off an attack.

A similar set of symptoms may be associated with the onset of any acute infection, although more common they are absent. In either case, if a febrile condition present extra insulin is required, and, since the diet usually not tolerated, glucose or cane-sugar drinks must be given, together with a suitable invalid diet, until the child's condition improves. The dose of insulin is controlled by the urine tests. In general, the safest way to deal with a diabetic emergency is to administer plenty of sugar and fluids. This can do no harm so long as sufficient insulin is given to prevent the urine from showing a positive ferric chloride test. In the absence of laboratory control it is wisest to allow the urine to contain some sugar until a definite diet can be resumed. Less severe infections, such as the common cold, while not interfering with the diet, usually cause a disturbance of the carbohydrate metabolism. Extra insulin should be prescribed to correct this. Usually an increase of from 2 to 4 units will be enough to bring the urine sugar to the accustomed level. Shocks and accidents also often have a bad effect on the sugar metabolism. I have known a sudden shock in a child to precipitate a coma within twenty-four hours. If it is remembered that this may happen, it is relatively easy to control the disturbance with extra insulin and with appropriate sedative measures.

The author wishes to thank the members of the staff of the Hospital for Sick Children for permission to treat the children admitted under their care.

GLIOMA RETINAE TREATED BY RADON SEEDS

BY

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(With Special Plate)

Foster Moore's work at St. Bartholomew's Hospital on radiotherapy for malignant intraocular neoplasms has proved that glioma retinae is radiosensitive, and that in a number of cases this neoplasm has been completely destroyed by the application of radon seeds. An opportunity arose for studying the effects of a 3.5 millicurie seed inserted through the sclera into an eye which contained an extensive mass of glioma, and leaving this *in situ* for ten days before removal of the eye.

Histological investigations showed that the effective range of the radon in this case was 3 to 4 mm. in all directions around the site of the seed. Within this zone necrobiosis, chromatolysis, granulation and vacuolation, and typical changes in irradiated cells were obvious. Outside the 4 mm. radius the cells of the neoplasm appeared to be damaged in some places, but the histological changes were not so well marked or so uniform as within the 3 to 4 mm. radius from the radon seed.

Other observers have given the area of destruction from radon seeds as follows.

Dose		Area destroyed
0.7 mc.	.....	1.5 mm. in radius
2 mc.	.....	3.5 mm. in radius

Whatever the strength, 8 mm. is the maximum area of necrosis.

In Foster Moore's clinic at St. Bartholomew's Hospital it is at present the practice to use radon seeds of 1 or 2 millicuries in strength, screened by platinum 0.5 mm. thick, with a thin groove filed around the centre of the platinum envelope for the purpose of retaining a 000 black silk suture. This silk thread is tied securely in the groove

and to each of its free ends is threaded a half-circle arterial needle. The seeds are sewn to the exposed sclera at the desired site. From one to four seeds have been used at a time. For details of technique, post-operative complications, and results in these cases the reader is referred to the papers mentioned in the bibliography below.

Case Report

A male child, aged 2 years and 7 months, was referred to Mr. Foster Moore at St. Bartholomew's Hospital by Mr. Holmes of Liverpool on August 16th, 1934. In the absence of the former on holiday I had the opportunity of examining and treating the child. In July, 1934, the left eye had been excised for glioma retinae, and at this time the right eye was found to contain a white mass arising from the retina in the lower nasal quadrant, which was diagnosed clinically as glioma retinae. The parents refused to permit excision of this remaining eye.

The family history contained certain features of unusual interest. The father of the child had had his left eye removed for glioma retinae at the age of 14 months, and this diagnosis had been confirmed by pathological examination. The right eye was similarly affected, and his parents refused to allow it to be excised. At the age of 4 years he developed a very severe attack of scarlet fever, and during this attack the right eye gradually "cleared." In 1934 he was 34 years old, well, and employed as a secretary at a mental hospital. In the fundus oculi near the equator and along the course of the upper and lower nasal branches of the central retinal vessels there are now two irregularly shaped pale areas where the retina is atrophic, and there is some pigmentary disturbance. The retinal vessels traversing these areas are slightly darker in colour than normal. There is no evidence of any intraocular neoplasm, and no defect in the visual acuity. He was seen by several ophthalmic surgeons of good repute, who had no doubts about the clinical diagnosis. (I am grateful to Messrs. Holmes and Stevenson of Liverpool for notes about this case and for permission to publish these facts.)

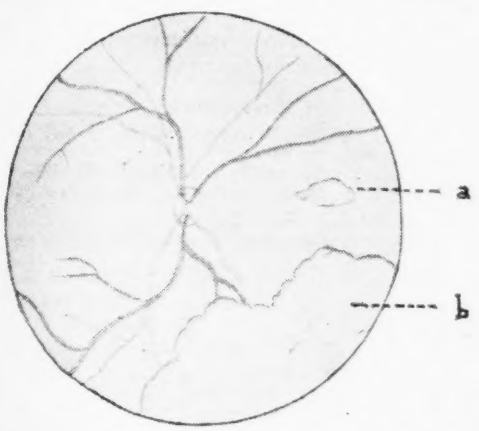

FIG. 3.—Fundus drawing. Right eye. *a*, Small island of glioma retinae in the 3 o'clock meridian just posterior to the equator. *b*, Large mass of glioma retinae occupying the lower nasal quadrant and projecting forwards into the vitreous.

The second child of this man's family, the younger brother of the case here described, was noted to have bilateral glioma retinae soon after birth; both eyes were so full of the growth that little normal retina remained in either eye. On account of the parent's refusal to permit excision of the eyes, and because of the father's spontaneous cure during an attack of scarlet fever, this child was given some injections of scarlet fever serum from the age of 4 to 8 months, but he proved to be immune to this disease and so this treatment was abandoned. Injections of globulin were tried between the eighth and sixteenth months of life, twice a week at first and then once a week until there was no reaction. I am indebted to Dr. Watkins for details about this treatment. This child at the time of writing this paper was aged 2 years 4 months; he was putting on weight, and was intelligent. The neoplasm perforated the left eye posteriorly at the age of 14 months, and the right eye is full of it. He is quite blind, and lives in a Sunshine Home for Blind Children.

The ophthalmoscopic appearances in the remaining eye of the child, about whom this paper is concerned, are shown diagrammatically in Fig. 3.

The remainder of the fundus was normal, and the optic disk, media, and other intraocular structures were within physiological limits. The pupil was active, and the eye moved normally in all directions. There was no clinical suggestion of extraocular extension of the neoplasm.

PROCEDURE ADOPTED

It was decided to apply four 2-millicurie radon seeds to the sclera over the site of the neoplasm between the 3 o'clock and 6 o'clock meridians just behind the equator and at 7 to 8 mm. intervals on the scleral. This was effected on August 21st, 1934, under a general anaesthetic.

The conjunctiva was incised 6 mm. posterior to the limbus from 2.30 to 6.30 o'clock, undermined posteriorly, and retracted. The internal and inferior recti muscles were identified, and the former was divided 1 mm. from its insertion after passing two mattress sutures through its substance 2 mm. behind the proposed line of section. The sclera was cleanly exposed as far back as 6 or 7 mm. behind the equator, and absolute haemostasis was effected. The four 2-millicurie radon seeds were sutured to the sclera just posterior to the equator, with the long axis of every seed placed in the antero-posterior axis of the globe at intervals of 7 to 8 mm. The uppermost radon seed was in line with the upper margin of the internal rectus muscle, and the lowermost in line with the temporal margin of the inferior rectus; the other two were placed in the same sagittal plane at equidistant intervals in the lower nasal quadrant (Figs. 1 and 2 on Plate).

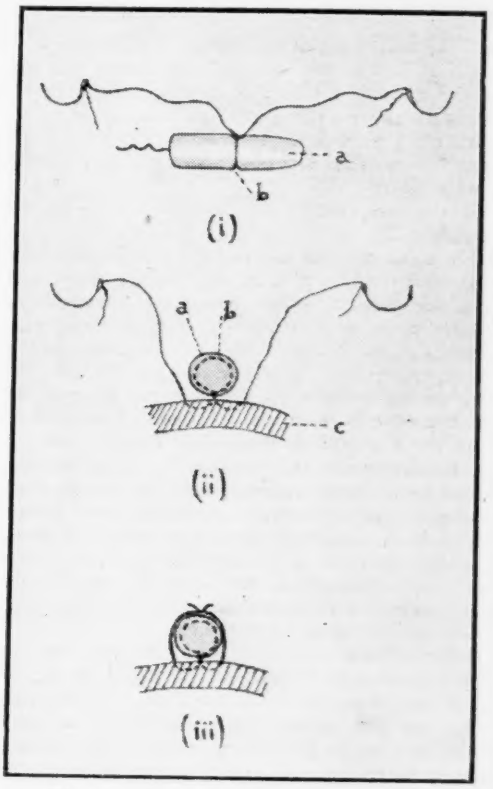

FIG. 4.—Diagrams drawn to show the method of suturing a radon seed to the sclera. (i) *a*, Radon seed. *b*, Fine black silk thread tied in a groove filed through the platinum envelope circumferentially about its centre. Arterial needles are attached to the free ends. (ii) The interrupted line represents the silk thread running in the groove around the radon seed and then passing through the superficial layers of the sclera, *c*. (iii) The ends are brought together over the seed and tied in the groove.

The method of suturing the radon seeds to the sclera is shown in Fig. 4.

There was no evidence of extraocular extension of the neoplasm. The internal rectus muscle was then sutured to its divided tendon with mattress sutures, which passed forwards through the conjunctiva and were tied. The conjunctiva was brought forward to cover the seeds, and the edges of the

incision closed with several interrupted sutures of fine silk. Gutt. atropine sulphate 1 per cent. was instilled and the eye covered with a pad and bandaged. The elbows were encased in corrugated cardboard, and syr. chloral 3 j with port wine 3 j was administered four-hourly for forty-eight hours.

POST-OPERATIVE SEQUELS

The day after the operation the right lower lid was slightly oedematous, and the conjunctiva was injected over the site of the incision. The media were clear. On the third day (August 24th) the main mass of glioma appeared more densely white and opaque and was less flocculent; on the seventh day its upper extremity became broken up.

On the tenth day (August 31st) the radon seeds were removed. There was no evidence of scleral necrosis or any sign of extraocular extension of the neoplasm. The cut edges of the internal rectus muscle and the conjunctival incision were unhealed and covered with yellowish-white lymph. Conjunctivitis was evident. Fourteen days after the operation (September 4th) the neoplasm was flatter; dense white flecks embedded in greyish translucent-looking growth were present at its upper and lower extremities. The centre of the neoplasm was yellowish-grey in colour, and there was some slight pigmentary disturbance in the fundus immediately posterior to the main mass of the glioma and surrounding the island in the 3 o'clock meridian. In the lower nasal quadrant there were some very fine vitreous opacities, but otherwise the media were clear.

During the two months after irradiation the growth diminished considerably in size, and at the end of this period the site of the main mass in the lower nasal quadrant was represented by dense white plaques of scarring about 1.5 mm. in diameter, the edges of which were sharply defined. Posterior to this area there was pigmentary disturbance of the fundus, the pigment spots being small and irregular, and peppered over a greyish-yellow background. (At St. Bartholomew's Hospital we have come to regard these changes as typical post-irradiation effects in the fundus.) The oval island of glioma in the 3 o'clock meridian (see Fig. 3) took about four months to disappear and become replaced by scar tissue surrounded by a zone of characteristic pigmentary disturbance. The edges of the conjunctival incision took three to four months to heal, and then formed a pale scar with hyaline degeneration adherent to the underlying sclera. The vessels in the adjacent conjunctiva were dilated, and showed certain calibre irregularities characteristic of the changes that follow the application of radon to the sclera.

No complications were evident until one year and one month after the application of the radon seeds, when the optic disk was observed to be hazy but of good colour, and a sharply defined reddish spot was noted at the macula surrounded by some greyish exudate. The retinal vessels appeared to be normal, and there was no clinical evidence of recurrence. The changes mentioned above were still present on December 13th, 1935. On March 16th, 1936, a few streak-like retinal haemorrhages were seen below the macula, and a small amount of crimson blood mixed with vitreous was noted near the ora serrata about the 5 o'clock meridian over the scarred site of the main mass of the neoplasm. Some of the exudates around the macula had cleared and the edges of the optic disk were less hazy, its colour remaining within physiological limits.

For two years after treatment by radon seeds there has been no clinical evidence of any glioma retinae elsewhere in the fundus, or a local recurrence of this neoplasm, and the child is able to see well enough to play with ordinary toys and with other children. He has been able to recognize two dogs playing in a field one-quarter of a mile away and to differentiate the size of the animals. He has remained in good health, put on weight, developed normally, and clinically has shown no sign of any intracranial extension of the glioma.

Although it is too soon to pronounce a definite opinion about the prognosis of this case, its course to date, judged by comparison with events in a few similar cases treated by radon, affords a reasonable basis for hope. Remote complications such as irradiation cataract have occurred in some cases up to eight years after irradiation near the eyes, but in these the lens may be removed and visual acuity restored provided that the retina and optic nerve are healthy. It is probable that such complications as irradiation cataract, iritis, corneal ulceration and necrosis, panophthalmitis, severe retinitis, and optic atrophy are caused by larger doses of radium or radon than we have thought fit to use in recent years.

In the case reported there was a mild degree of oedema affecting the optic disk, macula, and the papillo-macular bundle accompanied by some spots of exudate, and later a few fine retinal haemorrhages occurring one year and one month after radiotherapy. A similar complication has been noted in one of Foster Moore's glioma retinae cases, and in two cases of angiomatosis retinae treated by radon seeds. In the former, papilloedema and retinal haemorrhages were noted three months after a third application of radon by suturing four 3-millicurie radon seeds to the sclera over the site of the neoplasm in the upper nasal quadrant near the equator. (See *British Journal of Ophthalmology, Monograph Supplement*, "Radiant Energy . . ." p. 32.) Exudates arranged around the macula in a circinate manner appeared between the third and sixth months after irradiation. The haemorrhages cleared in the course of seven months, but the exudates took two and a half years to disappear, their site being represented by some pigmentary disturbance. In one of the angiomatosis retinae cases, exudate at the macula appeared ten months after the scleral application of three 5.1-millicurie radon seeds to the upper nasal quadrant 10 mm. from the limbus in the 2.30 o'clock meridian of the right eye. These exudates cleared during the next three months.

I thank Mr. Foster Moore for permission to publish this case, which was treated in his wards at St. Bartholomew's Hospital, and for his advice and interest during the post-operative "follow-up."

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A. Laskiewicz (*Rev. de Laryngol., d'Otol. et de Rhinol.*, July–August, 1936, p. 749) describes three personal cases and gives a general survey of the literature on fractures of the larynx. Fractures of the thyroid cartilage occur in the superior and inferior horns and at the base of the anterior angle, where the cartilage splits. The cricoid cartilage breaks at the sides, less often in the thickened posterior portion when the fracture is accompanied by a luxation of the crico-arytenoid articulation. The hyoid bone is well protected behind the mandible and is seldom involved, but it has been known to become fractured by violent contraction of the pharyngeal constrictor muscles in vomiting. At the time of the injury there is always loss of consciousness through reflex inhibition of the vagus (laryngeal shock); later one finds loss of voice, pain, haemoptysis, cyanosis. An interesting sign is subcutaneous emphysema, occurring more particularly with injuries of the cricoid cartilage when there has been a break in the mucous membrane. In the complicated fractures with haemorrhage and emphysema the lower air passages may become gradually occluded, and a tracheotomy cannot save the patient. Later complications are pneumonia and mediastinitis, also septicaemia from continued suppuration of separated fragments of cartilage. Marschik estimates that the mortality of fractures of the larynx is as high as 37 per cent. As regards treatment, an emergency tracheotomy is nearly always necessary. In the more complicated cases one may have to perform a laryngofissure in addition. This allows one to remove loose fragments of cartilage. Pieces of cartilage still attached by perichondrium are pushed into place and held there by packing. According to the author such fragments must never be fixed by sutures, as this causes obstinate fistulae in the neck.

SPONTANEOUS SURGICAL EMPHYSEMA IN CHILDREN

BY

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(With Special Plate)

Spontaneous surgical emphysema in children is uncommon, and Rolleston[1] has stated that in thirty years' experience of fever hospital practice he has seen "barely half a dozen cases" with this complication. It most often occurs in association with whooping-cough, measles, diphtheritic laryngeal obstruction, and bronchopneumonia, the last-named occurring along with the above or independently of them. Other conditions with which it has been described are asthma and bronchopneumonia[2]—a combination which would appear to favour its production, but which is nevertheless uncommon—and in the forced respiratory efforts in a diabetic air-hunger.[3]

Spontaneous surgical emphysema in children may be grouped as follows: (1) congenital—a rarity occurring at birth or shortly afterwards[4]; (2) infective—in association with gas-forming organisms; (3) associated with laryngeal or bronchial ulceration,[5] as by laryngeal diphtheria or foreign body; and (4) associated with lung diseases, especially bronchopneumonia.

Illustrative Cases

It is the last-named variety with which we are concerned, as the following cases illustrate.

CASE I

A girl, aged 4½ years, was admitted to hospital with a four-days history of spasmodic cough and fever. A few hours before admission her parents had noticed a swelling on the left side of the neck, which was rapidly spreading on to the face. When examined her general condition was fairly good; surgical emphysema was present over the left side of the neck and face, and extended a little way on to the chest wall. Signs of bronchopneumonia were present in the left lung. The next day the emphysema had spread to the other side of the neck and further up the face and down the chest wall, but there did not appear to be any undue distress or dyspnoea. Signs of a left-sided pneumothorax were definitely present, and this was confirmed radiologically. Whooping-cough was suspected, but she never whooped, and a negative pertussis plate was obtained; the leucocytes numbered 11,500 per c.mm., of which 67 per cent. were polymorphs. The Mantoux reaction was negative.

The emphysema gradually subsided as the signs in the chest cleared, and by the sixteenth day the child appeared perfectly well. Subsequent clinical and radiological examinations revealed a normal chest, and the girl is now in excellent health.

CASE II

A girl, aged 5 years, was admitted to hospital with the history that for the previous three days she had been sneezing continually in spite of all efforts to stop it. The left side of her face was noticed to be swollen a day before admission, and the swelling had spread rapidly over the face and chest wall. She had been in contact with whooping-cough at school, and the fact that she herself whooped subsequently would appear to be sufficient evidence that the paroxysmal sneezing was a whooping-cough variant. Examples of this are well recognized and not uncommon in the literature.[6]

On admission she was collapsed, with considerable cyanosis and dyspnoea and a rapid, feeble pulse. Short explosive sneezes occurred about every half-minute, and the child was distressingly ill. She was "blown up" with surgical emphysema extending from the scalp to half-way down the thighs; both eyes were closed, and the skin appeared to be lifted about an inch from the chest wall (Fig. A). It was difficult to determine with any accuracy the underlying signs in the lungs; there was no cardiac displacement, but signs of bronchopneumonia were found at the right base, and this was subsequently confirmed radiologically. There was a leucocytosis of 30,000, with 80 per cent. polymorphs.

Considerable difficulty was encountered in controlling the sneezing. Adrenaline and cocaine nasal sprays were given, but most relief was obtained with morphine and atropine, though the cyanosis made one sparing in the use of morhpine at the onset. The sneezing gradually ceased about four days after admission, with one short return, and the girl's condition improved. The temperature remained up for three weeks, and the chest signs showed considerable delay in resolution. By the end of a month all signs of emphysema had gone (Fig. B). Unfortunately she developed chicken-pox at this stage, but, apart from this and the delayed resolution referred to, she made an excellent recovery

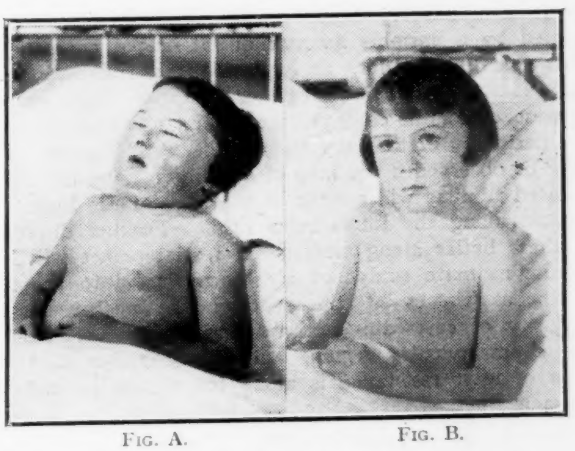

FIG. A. FIG. B.

CASE III

A boy, aged 5, was admitted with the following history. He had been in good health until a week before admission, when he developed what the mother called a heavy cold, with headache and abdominal and limb pains. Five days later he vomited, complained of a sore throat, and became noisy and restless. His bowels had been regular. When first seen he looked toxic, was inclined to be drowsy, and showed signs of pneumonia at the right base. There was a short dry cough, but not violent or severe. The signs in the chest persisted, and the boy began to look more toxic; his temperature remained between 104° and 105°, and his pulse was 150 to 160. He became more drowsy, though there were no meningeal signs, and there was incontinence of urine and faeces.

Four days after admission surgical emphysema was noticed around both supraclavicular areas and extending a short way on to the chest wall. This appeared in the night, without any severe spasm of coughing. When first seen it was bilateral, though it subsequently became most marked on the right side without ever becoming at all extensive. A leucocyte count of only 8,400 per c.mm. with 73 per cent. polymorphs was taken to indicate a very poor response to infection.

Fourteen days after admission he died. At the necropsy, much to the clinician's surprise and to the pathologist's delight, the true cause of his illness was revealed in the presence of typhoid ulcers in the small intestine. Both lungs showed some bronchopneumonia, especially at the right base, where the majority of signs were present during life. Beneath the pleura of both lungs, especially on the medial aspect, were chains of small bullae, and at the hila these extended into the mediastinal tissue. The latter was honeycombed with bullae, which could be plainly seen in the fresh specimen dissecting their way up the mediastinal fascial planes to the neck (Fig. 1 on Plate).

CASE IV

A boy, aged 4 years, was admitted as an emergency case during the night, after an illness of thirty-six hours. His symptoms were those of extreme dyspnoea, with a violent

paroxysmal cough. He was said to have had four similar attacks during the past year. On admission he was collapsed, semi-conscious, and ashen-grey in colour, with severe dyspnoea but no stridor. The chest was full of moist sounds, but no definite localized signs could be determined. He died two hours after admission. The post-mortem examination showed a diffuse haemorrhagic bronchopneumonia, with a small bronchiectatic area at both bases. The most striking finding, however, was an extensive interstitial emphysema. The bullae were most prominent at the interlobar margins and along the interlobular septa, and appeared to be tracking towards the mediastinum, where small bullae were found in the mediastinal tissues surrounding the hila (Fig. 2 on Plate).

Mechanism of the Condition

Study of these cases serves to illustrate the mechanism by which spontaneous surgical emphysema arises. An acute inflammatory lesion of the lung may be accompanied by a variable amount of interstitial emphysema. If to this damaged lung an explosive force is superadded—for example, whooping-cough or sneezing—there will be a tendency for the emphysematous bullae to track towards the periphery of the lung and/or the mediastinum. This may be observed if the lung of a stillborn baby is forcibly inflated ; bullae will appear at the edge of the lungs and extend along the interlobular septa. Further dissection of these bullae along mediastinal fascial planes will lead to the ultimate escape of air by rupture into the subcutaneous tissues at the root of the neck. In the majority of cases this appears first on the left side in the supraclavicular region, and this suggests that the path of least resistance is along the tissues around the thoracic duct.

In the first case described there was an associated pneumothorax, which presumably arose in consequence of the rupture of an emphysematous bulla into the pleural cavity. The immediate effect is, of course, collapse of the underlying lung, with consequent reduction in the intrapulmonary pressure. Further coughing in such a case would not increase the spread of emphysema.

It would appear, therefore, that to account for the presence of the two conditions one must postulate the simultaneous occurrence of subcutaneous and intrathoracic rupture. This fortuitous happening may well account for the extreme rarity of the combination. Berkley and Coffen[7] report two such cases in adults with influenzal pneumonia, but no case has been found recorded in children.

An alternative theory to the above, to account for the presence of subcutaneous air, is that bronchial ulceration occurs and that the air escapes along the peribronchial or perivascular channels to the mediastinum. That this may happen in laryngeal and bronchial diphtheria is feasible, but a study of the foregoing cases would appear to show that bullae first appear away from the bronchi at the periphery of the lung, and no signs of bronchial ulceration were discovered. One would imagine, too, that, if this was the true explanation, such a condition as bronchiectasis in its more acute exacerbations would be not uncommonly complicated by surgical emphysema ; this, however, is not so.

Treatment

There would appear to be five available methods of treatment—namely, (1) subcutaneous needling ; (2) collar incision ; (3) tracheotomy ; (4) artificial pneumothorax ; and (5) the *vis medicatrix naturae*.

(1) Needling has been practised on several occasions,[8] but has the definite risk of sepsis. Moreover, there is no doubt that the air can be, and is, ultimately absorbed, and one cannot consider this a method of choice.

(2) Grey Turner, in *Modern Operative Surgery*,[9] refers to the operation of releasing the air through a transverse incision at the suprasternal notch, thus opening up the space of Burns, which is in communication with the superior mediastinum. An amusing corollary to this was described by Silvester[10] before the Royal Academy of Science in 1885. He advocated the following "simple" method of saving oneself from drowning. This was to puncture the floor of the mouth close to the base of the gums with any sharp instrument (where this is to be obtained is not related), and to force the finger through the incision until the superficial fascia of the neck is reached. Then, with the mouth and nostrils closed, expiratory effort forces air into the subcutaneous tissues and so produces sufficient surgical emphysema for the body to be kept afloat!

(3) Tracheotomy has been performed with the idea of relieving pressure on the trachea, which Cook[11] reported in his case to be flattened. Rolleston[5] reports "considerable relief" from a tracheotomy done in a case of diphtheria with emphysema, but here the result may have been modified by the tracheotomy relieving any associated laryngeal obstruction.

(4) In view of the mechanism by which spontaneous surgical emphysema is believed to arise, the most rational treatment would appear to be collapse of the lung by an artificial pneumothorax. Birch[12] has shown a case so treated with an excellent result. One practical difficulty is to determine which side to collapse, because extensive emphysema makes localization of the underlying lung condition very difficult, and in such cases a radiograph is of considerable help. In Case II, where the need for active treatment was most urgently felt, the child was so desperately ill that one hesitated to introduce any measure which might increase shock.

(5) In the cases reported above no active measures were taken to relieve the emphysema. In each instance the air was gradually absorbed and without difficulty. In Case III the boy died from typhoid and not from the emphysema complication.

It is my opinion, therefore, that the best treatment is to leave well alone and to let the air be absorbed naturally although it is agreed that, if active measures are contemplated, artificial pneumothorax is the method of choice.

Summary

(*a*) Spontaneous surgical emphysema is a rare condition in children.

(*b*) Three cases are reported, together with a further case illustrating the mechanism by which the condition arises.

(*c*) It is postulated that emphysematous bullae track up the mediastinum, mainly along the lymphatic planes to the subcutaneous tissues of the neck.

(*d*) No special treatment is urged, but artificial pneumothorax may be performed.

(*e*) The prognosis of any case is not made worse by the complication of emphysema.

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THE SURGICAL MANAGEMENT OF HIGH GASTRIC ULCERS

BY

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(With Special Plate)

In May, 1933, C. A. Wells of Liverpool[1] described four cases of chronic gastric ulcer, situated high up on the lesser curve of the stomach, which he had treated with most gratifying results by performing a Polya-Moynihan partial gastrectomy, the line of section of the stomach being made below the level of the ulcer, so that the ulcer was left in the remaining portion of the stomach. His first case was operated upon in February, 1930. During the same month, quite independently, Deanesly at Wolverhampton devised the same method of dealing with these cases, and before he retired from the staff of the Royal Hospital, Wolverhampton, in 1931, performed the operation four times. Since then six more examples have been added to this series by myself. These ten cases form the basis of this paper, and I feel that the results certainly justify the line of treatment being given a more extended trial. The series is a short one, but I hope that other surgeons who may have given the method a trial since the publication of the paper by Wells will announce their results so that greater experience may lead to a more accurate estimate of the value of the operation.

The Operation

In the present series the operation was performed in most cases after the patient had had repeated courses of medical treatment, often as an in-patient, but the symptoms had failed to subside. In two cases the symptoms were of quite short duration, but the operation was advised on account of a suspicion of malignancy. The ages of the patients ranged from 31 to 52, the average being 43.4 years. There were only two women, both housewives, while most of the men were employed in heavy occupations. The first was operated on six years ago, and the last only nine months before the present report.

In each of these cases the ulcer was situated high up on the lesser curve of the stomach, and was adherent to the liver or pancreas, or both. Excision of the ulcer would have been difficult and attended with considerable risk, whereas a gastro-jejunostomy for these high ulcers does not give satisfactory results. As regards the possibility of malignancy, none of these was considered to be carcinomatous at operation, but, if there is any doubt, a growth in this situation invading the liver or pancreas is not operable, so that the question of its excision does not arise. In every case the operation was performed under general anaesthesia, supplemented by infiltration of the intercostal nerves and splanchnic plexus with novocain.

The type of operation was the Polya-Moynihan method, the anastomosis being antecolic, with the afferent loop of jejunum at the greater curve. In one case a retrocolic anastomosis was performed, because the fixation of the ulcer to the liver prevented an anterior anastomosis unless a very long afferent loop was made. Silk suture material was used in the earlier cases, but catgut has been employed in the last half of the series. There was no mortality from the operation, and no serious complications.

Results

One of the series (Case 2) cannot be traced. The patient last attended his panel doctor four years after his operation, but his doctor having left the district we have not been able to find out what his condition was then. Another patient (Case 4) received no benefit from the operation. In addition to her gastric ulcer she suffered from gall-stones, and her gall-bladder was removed at the same time. The gall-bladder was probably responsible for most, if not all, of her previous symptoms, so that the case can hardly be considered a fair test of the operation on the stomach. She has not been up for examination, but her doctor has kindly sent a report regarding her condition.

The remaining eight patients are all on full work. There is no complaint of any symptoms except slight feeling of fullness after meals. Seven of these have been examined recently, and six were submitted to a barium meal and *x*-ray examination. The eighth patient, who lives twenty miles away, has been interviewed by his own doctor, who has kindly furnished a report. Of the six who were recently examined radiologically five showed no sign of an ulcer; the sixth, who has no symptoms, shows slight scarring at the site of the ulcer, with a little spasm of the greater curve.

It may be claimed, therefore, that among the nine patients who have been followed, eight can be regarded as clinical cures. Most of them eat whatever food they desire, smoke a moderate number of cigarettes, and take a reasonable quantity of alcohol without its bringing on indigestion. They have been able to follow their occupations without interruption from gastric trouble since their post-operative convalescence was completed; the period of time since their operations is nine months in the most recent to over six years in the earliest.

Case Reports

Case 1.—A coal miner, aged 31, had had pain for one year, and three severe attacks of haematemesis. At the operation on February 27th, 1930, an ulcer was found high up on the lesser curve. A report from his doctor, dated June 9th, 1936, states: "Condition satisfactory, no complaints; still thin, but not losing weight; eats practically anything, feels fitter than he has ever done; no vomiting, except when he drinks too much beer; smokes a lot; has been at work continuously since recovery from the operation."

Case 2.—A miller, aged 36, had had a three-years history. At the operation on March 24th, 1930, a small, deep indurated ulcer was found high up on the lesser curve. He attended his panel doctor in 1934, but has been untraced since.

Case 3.—A male spinner, aged 49, had had one year's history, including a course of in-patient medical treatment. The *x*-ray report indicated the presence of a gastric ulcer high up in the lesser curve. At the operation on January 12th, 1931, the *x*-ray findings were confirmed. On June 3rd, 1936, it was reported that he had been at work in a spinning shop continuously since his operation, except when he had pneumonia two years previously. He can eat anything; the weight keeps constant; he drinks beer, and smokes fifteen cigarettes a day. There are no symptoms.

Case 4.—A housewife, aged 50, had had a two-years history of indigestion with attacks of biliary colic. The *x*-ray report was that there was a gastric ulcer high up on the posterior surface. The operation was performed on June 18th, 1931, and was associated with a cholecystectomy for gall-stones. Her medical practitioner reported on June 4th, 1936: "She is very emaciated, has frequent attacks of vomiting and pain, and can only take just enough nourishment to keep her going."

Case 5.—A male planisher, aged 50, had had a six-weeks history of pain and vomiting. The *x*-ray examination showed a high posterior excavating gastric ulcer. At the operation on March 3rd, 1933, a large indurated ulcer was found high

up on the posterior surface; the stomach was very large. His condition on June 3rd, 1936, was: weight stationary; no pain or indigestion; he can eat anything; smokes twelve cigarettes a day, and drinks stout. He has been at work ever since the operation. The *x*-ray report was: "Still large stomach, empties rapidly; no sign of ulcer."

Case 6.—A retired photographer, aged 52, had had Finney's operation for pyloric ulcer in 1925; there was recurrence of pain for two years. The *x*-ray report indicated delayed emptying, and a suspicion of recurrence of the pyloric ulcer. The operation on October 9th, 1934, disclosed a large saddle-shaped ulcer high up and adherent to the pancreas. The condition on June 3rd, 1936, was reported as: "No indigestion; can eat anything, slight fullness after a heavy meal; has put on 1 st. 3 lb." The *x*-ray examination indicated a rapidly emptying stomach, and no sign of ulcer.

Case 7.—A housewife, aged 36, had had a two-years history. The *x*-ray report showed the presence of a large gastric ulcer on lesser curve, half residue after four hours. Weight 6 st. At the operation on January 11th, 1935, a large saddle-shaped ulcer was found on the lesser curve, penetrating the liver and pancreas. Her condition on June 3rd, 1936, was: "Can eat anything, and does her housework; no indigestion, and a feeling of fullness only after eating bacon." Weight 8 st. 5 lb. The *x*-ray examination revealed some scarring at the site of the ulcer, with some spasm on the greater curve.

Case 8.—A blacksmith, aged 44, had had a six-weeks history. The *x*-ray examination showed a large ulcer on the lesser curve (Fig. 1 on Plate). The operation on January 11th, 1935, disclosed a large ulcer on the lesser curve and posterior surface, penetrating the pancreas. His condition on June 3rd, 1936, was: "Weight stationary; no pain, but feeling of fullness after meals; eats anything. Smokes ten cigarettes a day, drinks stout." Has worked as a blacksmith without interruption since April 8th, 1935. The *x*-ray report was: "About half stomach remaining, some sagging below the anastomosis; no sign of ulcer, and no delay in emptying." (Fig. 2 on Plate.)

Case 9.—A crane driver, aged 37, had had an eight-years history of indigestion. The *x*-ray film revealed a large excavating ulcer on the lesser curve (Fig. 3 on Plate). At the operation on July 5th, 1935, a large ulcer was found high up on the lesser curve, with induration extending almost to the cardia. His condition on June 3rd, 1936, was: "Has gained 3 lb. in weight; a feeling of fullness after meals passes off in ten minutes; eats most things, but has kept off pork. Smokes ten cigarettes a day, and takes alcohol occasionally; at work continuously since September 30th, 1935." The *x*-ray report was: "Stomach empty in a few minutes; no sign of ulcer" (Fig. 4 on Plate).

Case 10.—A male fitter, aged 49, had had a fifteen-months history of indigestion. The *x*-ray report revealed a large excavating ulcer on the lesser curve. At the operation on October 1st, 1935, there was found a large ulcer on the posterior wall near the cardia, penetrating the pancreas. His condition on June 3rd, 1936, was: "No indigestion or feeling of fullness; has put on 1 st. 3 lb., and been at work since he resumed after leaving hospital; is careful with his diet, avoiding pork and much coarse meat. Smokes three cigarettes and takes one bottle of stout a day." The *x*-ray film showed rapid emptying and no sign of ulcer.

Summary

A short series of cases is recorded in which a partial gastrectomy below the ulcer was performed for high gastric ulcers on the lesser curve, the ulcer being left *in situ*. Out of nine patients who have been traced, eight can be regarded as cured; they are leading normal, active lives, having no symptoms or only a little feeling of fullness after meals.

I owe a debt of gratitude to Mr. E. Deanesly, F.R.C.S., not only for permission to report on his cases, but also for introducing me to this and many other practical surgical procedures. I also wish to thank Dr. G. E. Dyas for the radiographs, and Drs. C. L. Spackman and C. A. Hodges for their help in reporting on some of the patients.

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DIVERTICULA OF THE STOMACH

A REPORT OF TWO CASES

BY

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(With Special Plate)

The subject of diverticula of the stomach was reviewed by Rivers, Stevens, and Kirklin[1] of the Mayo Clinic in 1935. These authors state that 141 cases had been recorded in the literature up to the date of their paper, the majority being since the introduction of radiology of the stomach and many lacking pathological confirmation. The following classification is suggested by the above authors for the purpose of analysing the various types of gastric diverticula:

1. *True Diverticula.*—Those in which the pouch includes all coats of the gastric wall without definite evidence that organic disease was the causative factor. Such diverticula probably are congenital.

2. *Acquired, True Diverticula.*—In these all coats of the gastric wall are present, although there may be some thinning, and there is evidence that some disease was instrumental in causing the pouching.

(*a*) Pulsion type diverticula result from intragastric pressure, which is probably localized.

(*b*) Traction type diverticula are incidental to extragastric adhesions.

3. *False Diverticula or Diverticula Formations.*—In these there is a break in the gastric wall resulting from disease.

The authors above quoted record in their paper fourteen cases of true diverticulum of the stomach. Pathological confirmation was carried out in all these cases, ten of the diverticula being removed at operation and four at post-mortem. The site distribution of these fourteen cases was as follows:

Cardiac portion	6 cases	43 per cent.
Pyloric portion	6 ,, ...	43 ,,
Mid-gastric	2 ,, ...	14 ,,

Case Records

The two gastric diverticula now reported were removed at post-mortem at St. Bartholomew's Hospital, and the specimens are in the museum of the medical college. They are reported as examples of a rather unusual condition, but one which is likely to be encountered more frequently in the future as the result of the increasing use of radiology in the investigation of gastric disease.

CASE I

The specimen was removed at post-mortem from a woman of 44, who died following cholecystectomy. For some twelve years she had suffered from severe attacks of abdominal pain, which had at times been followed by jaundice. There was nothing in the symptomatology to suggest that the patient had ever suffered in any way from the presence of a gastric diverticulum. At operation the gall-bladder was found to be chronically inflamed and to contain many small calculi. Post-mortem examination showed an extreme degree of atrophy of the thyroid and of the suprarenal cortex, and these changes were probably responsible for death twelve hours after operation.

The specimen is in the museum of St. Bartholomew's Hospital Medical College, No. K.136. The diverticulum (Fig. 1 on Plate) is situated on the greater curvature of the stomach about one inch below the cardiac orifice, and is one inch in length and one inch in width, and its orifice is three-quarters of an inch wide. It is extremely thin-walled, and the level at which the gastric muscle surrounds it can be made out. The rest of the stomach is natural.

Microscopically the wall of the diverticulum is lined by rather flattened epithelium, usually only one layer thick and

set on a thin layer of lymphoid tissue. Outside this there is a small amount of connective tissue deep to the peritoneum. A very thin layer of muscle tissue exists in the wall of the diverticulum.

CASE II

The specimen was removed at post-mortem from a man of 68. Twenty years previously he had been operated on for a perforated gastric ulcer, and nine years previously suprapubic prostatectomy had been carried out. Since that time he had suffered from intermittent dyspepsia, and had been under treatment for gastric ulceration. On admission to hospital he was an extremely ill patient, with a pulse of 135 and a subnormal temperature. Death occurred three days later, and post-mortem examination showed thrombosis of the right branch of the coronary artery.

The specimen is in the museum of St. Bartholomew's Hospital Medical College, No. K.136*a*. In addition to the diverticulum (Fig. 2) a gastric ulcer and a healed ulcer are also present. The diverticulum is situated on the greater curvature of the organ immediately below the cardiac orifice. It is about one and a quarter inches in diameter, and its mouth is three-quarters of an inch in diameter. The diverticulum is very thin-walled. On the posterior wall of the stomach just below the lesser curvature is an irregular scarred area, the site of previous gastric ulceration. Immediately below this and a little distally is an irregular area of superficial ulceration, which extends down as far as the muscle coat and exposes a wide-mouthed vessel.

Microscopically the wall of the diverticulum is composed of compressed glandular elements, the superficial cells being very flattened. Outside this is a very thin layer of muscle tissue, a little connective tissue and the peritoneum forming the covering of the wall.

Comments

Diverticula of the stomach are rare, but they have been more frequently encountered since the introduction of radiology of the stomach and the more frequent exploration of that organ.

Pathologically the true diverticula have to be differentiated from diverticular formations secondary to peptic ulceration, carcinoma of the stomach, or other pathological process in which destruction of the stomach wall is present.

The true diverticula are themselves rarely the cause of symptoms, though in some instances failure of the diverticulum to empty normally during digestion has been responsible for epigastric discomfort, and these symptoms have been cleared up by removal of the diverticulum. In other cases this local stasis has been followed by diverticulitis. Haemorrhage from the interior of the diverticulum has been recorded by several writers. On the other hand, it has to be remembered that associated gastric or duodenal disease in the form of ulceration has been present in many of the recorded cases, and has been responsible for the symptoms. Radiologically there is also likely to be a very real confusion between true diverticula produced by ulcers and those produced by malignant disease. The value of the "mucosal relief" technique of Berg in the diagnosis of diverticula has recently been recorded by Ewart and Cordiner.[2]

The two gastric diverticula now recorded were removed at post-mortem examination. In neither case were any symptoms directly attributable to the presence of the diverticulum. In one case the condition was associated with a chronic cholecystitis with gall-stones, while in the second case there had been a long-standing history of gastric ulceration, and at the time of necropsy scarring and ulceration were still present in the stomach.

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LATE ULNAR NERVE PARALYSIS

BY

D. H. SANDELL, F.R.C.S.

(*With Special Plate*)

The ulnar nerve at the elbow lies in a groove in the back of the internal condyle of the humerus ; it is almost subcutaneous, being covered only by a sheath of fascia, which helps to keep the nerve in position during movements at the elbow-joint. In this position the nerve gives a large branch to the elbow-joint, and this must be divided before the nerve can be mobilized.

Classification and Incidence

Lesions of peripheral nerves associated with fractures at the elbow-joint may be classified as follows.

1. Primary neuritis occurring at the time of the injury, and recognized immediately or when the splint and dressings are removed. It may be due to simple contusion or complicate internal epicondylar fractures, supracondylar fractures, or dislocation of the elbow-joint.

2. Secondary neuritis appearing three to four weeks after the injury, due to involvement in callus formation or enclosure between bony fragments or to injudicious treatment. It may complicate fractures of the lower end of the humerus or dislocation of the elbow-joint.

3. Late ulnar paralysis appearing many years after the injury to the elbow-joint has occurred.

The following are the proportions of fractures at the elbow: supracondylar, 45 per cent. ; external condylar, 30 per cent. ; and of the internal condylar, 25 per cent. The largest proportion of nerve lesions associated with a simple fracture occurs in the elbow-joint. In Platt's series of 552 fractures about the elbow-joint there were only thirteen cases (3 per cent.) of nerve injuries, twelve of the ulnar nerve, and one of the median nerve. The actual type of injury preceding the paralysis is a fracture of the external condyle. Mouchet has dealt with eleven cases of late ulnar paralysis following fracture of the external condyle. Platt also believes this, with the rare exceptions of an occasional fracture of the olecranon process or fracture of the head of the radius. He reports six cases in 1926 and three in 1928, each one associated with an old fracture of the external condyle.

Pathology

Miller, in 1924, came to the following conclusions.

1. The primary cause in practically all cases of late ulnar nerve palsy is a fracture through the elbow-joint during childhood, usually between the third and fifth years.

2. Although occasionally the fracture may be through the internal condyle or the supracondylar region, in the vast majority of cases the line of fracture begins laterally, just below the epicondyle, and passes obliquely downwards and into the joint, causing a complete separation of the external condyle.

3. The broken external condyle displaced laterally and forwards is not reduced by manipulation, so that non-union occurs. The growth of the humerus on the lateral side is interfered with to such an extent that a cubitus valgus gradually develops.

4. As the deformity increases, the olecranon encroaches upon the medial condyle ; the ulnar groove becomes a shallow depression, and the nerve itself is displaced in some cases from its bed. It then becomes subjected not only to stretching when the arm is flexed, but to repeated slight injuries, which eventually result in partial or complete ulnar palsy.

5. Paralysis may begin as early as three years after the injury, or as late as forty years—in Jefferson's case forty-one years. In most cases the paralysis is noted between the ages of 20 and 30. In the case I shall quote the paralysis occurred fifty-eight years after the injury to the elbow. The original injury is not invariably incurred in early childhood. Shelden, discussing twenty-two cases in 1921, reported a patient, aged 62, who had had an indefinite injury to the elbow at the age of 52, and another patient, aged 61, with bilateral ulnar neuritis, who had dislocated his left elbow at the age of 26 and the right at the age of 28.

Clinical Symptoms and Signs

The condition was first described by Panas in 1877; he presented a cobbler, aged 40, who developed an ulnar nerve paralysis thirty years after a fracture of the lower end of the humerus, and had cubitus valgus deformity and palpable enlargement of the ulnar nerve within the ulnar groove. In 1898 Mouchet described paralysis of the ulnar nerve which developed late and was apparently due to a cubitus valgus following a non-union of the external condyle of the humerus. In 1899 Broca, and Bowlby (1890), Weber, Bernhardt, and Curtis also described cases. Sherren in 1908 reported twenty-two cases, and Murphy in 1914, Hunt, Adson, Buzzard, Dean Lewis, Miller, and Platt have also reported cases.

In the clinical history of the condition there are usually three stages: (1) the fracture in childhood; (2) the latent period, rarely less than ten years; and, finally (3) the stage of ulnar neuritis. The original injury is usually the old fracture of the external condyle, the fracture line running into the elbow-joint. The broken fragment is displaced laterally and forward, and is turned on its axis by the attached extensor muscles. There is as a rule fibrous union or even non-union, but the elbow function is generally good. However, during growth there is an increase of the carrying angle from the normal 15 degrees, with cubitus valgus deformity due first to the displaced external condyle and later to interference with growth on the outer aspect of the humerus because of irregular epiphyseal growth. The latent period is not less than ten years in 75 per cent. of cases (Platt); between twenty and thirty years in 40 per cent. of cases (Miller); or even longer.

The first symptoms noticed are subjective, both motor and sensory. Pain may be present along the course of the ulnar nerve, usually increased by movements at the elbow-joint. Then wasting appears of the muscles supplied by the ulnar nerve, along the inner side of the arm (flexor carpi ulnaris and inner portion of the extensor carpi ulnaris), the hypothenar eminence (opponens, abductor, and flexor brevis muscles of the little finger), and of the interosseous spaces (the two inner lumbricals, and all the interosseous muscles), and a marked depression between the base of the thumb and second metacarpal bone (abductor pollicis and the deep portion of the flexor pollicis brevis). There is gradual loss of epicritic sensation on the inner side of the forearm, wrist, and hand, including all the little finger and the inner half of the ring finger; the protopathic loss is over an area smaller than this. Later, paresis and paralysis of these muscles follow, with the ultimate development of the claw hand (*main en griffe*). In consequence of the cubitus valgus deformity the nerve is compelled to take a longer course around the back of the humerus, over which it is stretched like a bow-string. Thus there is abnormal tension with repeated trauma during each movement of flexion. Symptoms are most marked after increased activity in work or sport. There is a gradual thickening of the part of the nerve lying in the ulnar groove, with a fusiform swelling, the so-called "fusiform neuroma."

Adson describes the process as follows:

"With repeated slight trauma, such as that due to bruising or to stretching of the nerve over the bony prominence, small haemorrhages in the perineurium and endoneurium result, causing inflammatory reactions and the deposit of scar tissue. As the scar tissue tends to contract many of the fibres become strangulated and are eventually destroyed, resulting in a gradual and progressive atrophy of the nerve."

The fusiform swelling is free and readily displaced from the groove because the site of injury (external condyle) is far removed from the ulnar nerve, and because perineuritis rarely occurs.

Differential Diagnosis

The diagnosis is made on the combination of ulnar nerve palsy, cubitus valgus, and the deformity of the external condyle—the result of an elbow injury many years previously. The symptoms follow periods of increased use of the limb, and radiography of the elbow will reveal the old injury. Other conditions to be eliminated are: anterior poliomyelitis, progressive muscular atrophy, syringomyelia, intramedullary tumour, amyotrophic lateral sclerosis, and meningomyelitis. The lesions affecting the anterior horns only or the anterior and lateral columns are easily differentiated by the absence of sensory changes and the sparing of some muscles supplied by the ulnar nerve. Syringomyelia and intramedullary tumours present dissociated sensory changes and evidence of involvement of the pyramidal tracts in the lower extremity. Volkmann's ischaemic paralysis may be distinguished by the absence of sensory changes limited to the distribution of the ulnar nerve, the induration of the muscles, vascular disturbance, and the absence of reaction of degeneration. The presence of a cervical rib must be eliminated by *x*-ray examination, as also local conditions—hypertrophic arthritis, osteoma, cyst, lipoma, or growths of the nerve.

Treatment

Although the proportion of cases of late ulnar palsy is small when compared with the total number of cases of external condylar fracture—the latter comprise 30 per cent. of the fractures of the lower end of the humerus in childhood—yet we must endeavour to prevent the possible late sequels of this type of fracture. Miller suggests that inability to reduce the fragment of the external condyle is an indication for operation to prevent growth deformity leading to cubitus valgus. The treatment is simple, and consists in relieving tension on the nerve by transposing it to the front of the elbow. The following is a summary of a case record.

A business man, aged 60, complained of lack of power and limited use of his right hand, with pain and stiffness, made worse after use and exercising. He had tingling along the inner side of the arm and the inner one and a half fingers. In the winter he found more difficulty in using the hand, especially on cold mornings. These symptoms first appeared gradually about five years ago, and have been most marked for the past eighteen months. He had had a fall at the age of 2, injuring his right elbow-joint, which had never been treated.

On examination there was found marked cubitus valgus; many bony excrescences were felt at the elbow-joint. An *x*-ray examination showed a severe old fracture at the distal end of the humerus, with separation and non-union of the external condyle. There was marked wasting of the muscles of the inner side of the forearm, of all the interossei, and of the hypothenar eminence. There was numbness with paraesthesia of the inner one and a half fingers.

An operation was performed under general anaesthesia. The ulnar nerve was exposed and freed, and a new bed was made for it among the muscles of the common flexor group. The nerve was found to be the seat of a large fusiform "neuroma," about three times the normal bulk of the nerve

and about one and a half inches long; it was covered with many thickened and dilated blood vessels.

Improvement was immediate. The tingling and stiffness of the fingers disappeared in a few days, and the patient soon found that he could execute fine movements with his fingers, which had been previously difficult or impossible. Convalescence was normal. He was given massage and sinusoidal stimulation to the muscles. There has been marked restoration of the affected muscles so that at this date, eight months after the operation, there is very slight difference between the two hands. Power has returned to the limb and restoration is complete.

Summary

1. Late ulnar nerve palsy develops many years after the original injury—from three to forty-eight, in this case fifty-eight, years.

2. The external condyle is usually fractured, and non-union may persist for many years.

3. The syndrome consists of the deformity of the external condyle, cubitus valgus, and ulnar nerve palsy.

4. The lesion is an intraneural fibrosis. The prognosis is good if the tension is relieved and the course of the nerve is shortened by anterior transposition.

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SEPARATION OF CONJOINED TWINS

BY

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(With Special Plate)

The separation of conjoined twins by operation must be rarely practicable. In the case here described the result was successful.

The twins (female), born to a Hausa woman in Sokoto Emirate, were united at the epigastrium by a circular funnel of tissue, which at the operation measured about one and a half inches in width and two inches in diameter. The union was such that the children could be turned away from each other to the extent of about a right-angle only. The sterna formed a continuous U-shaped bar of cartilage about half an inch in width across the top of the isthmus. A small single umbilical scar was visible on the under surface, about its middle. The photograph (see Special Plate) shows well the site and degree of the junction.

The mother, a healthy, well-developed woman aged about 25, had had previously two normal births, the first six years ago, the child (a boy) dying at the age of 10 months, and the second (a girl) now alive and well at the age of 5 years. The twins were born on December 20th, 1935, the estimated time of gestation being about 250 days. Birth was apparently not difficult, though the mother admits that she was in labour for nearly twenty-four hours, which is a relatively long labour for a multiparous native woman. She states that the head of one and the feet of the other presented together, and that the cord was single the whole way from the juncture to the placenta, which came away very shortly after the birth of the infants.

The twins were first seen at the age of 2½ months, when they appeared to be rather emaciated and anaemic, though quite vigorous. It was then apparent that operation was quite feasible, for by compressing the isthmus between the finger and thumb the bowel of the one or the other could be easily reduced into the abdomen, leaving nothing but integument and the bar of sternal cartilage between the fingers. Since the mother was rather reluctant to agree to operation, it was decided to leave them till the age of 6 months, when it was hoped that they would be more developed and better able to stand the operation. This hope was fulfilled, for on admission to hospital on May 27th, at the age of 5 months, they had grown into quite normal plump infants, though still anaemic. It was more evident now that one was a little more developed than the other.

The blood examination on admission showed a red cell count of 3,600,000 per c.mm. and a haemoglobin index (Tallqvist's scale) of 40 per cent. Two weeks on an iron mixture raised the count to 4,310,000 per c.mm., and the haemoglobin increased to 55 per cent. The mother's blood revealed only a slight degree of hypochromic anaemia (compared with the average standard of the normal native), with a count of 5,040,000 erythrocytes and a haemoglobin percentage of 70.

The Operation

On June 16th the operation was performed under chloroform anaesthesia, without any preliminary preparation apart from the oral administration of glucose. The stronger twin was anaesthetized first in the hope that the other would also go under, but after ten minutes of full anaesthetization no obvious effect was observed on the second twin, and she had to be separately anaesthetized. The operation presented no great difficulty. The incision was made vertically through the middle of the junction, and on opening the peritoneum it was observed that there was a vertically placed peritoneal septum in the upper half with a "foramen" at the lower part, through which bowel from one or the other could easily pass. The only structure divided, apart from the integument, peritoneum, and the sternal cartilage, was the ligamentum teres of the larger twin's liver, and this was found traversing the upper part of the isthmus extraperitoneally. Its connexion with the umbilicus was not traced.

As soon as separation had been effected the infants were placed in the supine position, and each wound was sutured up vertically in turn. No attempt was made to trim the projecting cut edges of the sterna or the skin, and only excess of parietal peritoneum was excised. The rectus aponeuroses were thin and attenuated, but the recti themselves seemed undeveloped in this area; after operation it was evident that this was so, since there was in each around the site of union an oval-shaped area, which was quite devoid of muscular tissue. The gap was about two and a half inches in its widest part, and there was no muscle attachment to the lower ends of the sterna. The cut ends of this have straightened out since the operation; this makes the bulge of the abdominal wall in this area less obvious than it might have been had the sternal ends been resected. There is still the probability, of course, that they will develop large umbilical hernias later.

Apart from a slight attack of enteritis in the weaker infant, and a stitch abscess in each wound, the post-operative period was uneventful. The mother was able to breast-feed the children from the first day. The weights just after the operation were 10 lb. and 12 lb. respectively, and now, six weeks later, 13 lb. each. The blood count has improved to 4,900,000, and the haemoglobin to 60 per cent.; they are now in every way normal and vigorous infants.

It would be interesting to know if this operation is unique. It was exceedingly fortunate that the twins were united in what might be termed "the least degree," each having separate organs.

I am indebted to the Director of Medical Services, Nigeria, for permission to publish this article.

W. R. H. Kranenburg and J. J. Wallien (*Nederl. Tijdschr. v. Geneesk.*, August 15th, 1936, p. 3715) state that the notification of forty-one cases of lead poisoning in cigar makers in a certain district of Holland led to an inquiry which proved the existence of the sources of intoxication to be the zinc cutting sheet and the drinking-water in the factories and in the workmen's homes. The authors are of opinion that the zinc cutting sheet was a possible source of intoxication, though only in a very slight degree, whereas they regard the water containing lead as a very important factor.

Clinical Memoranda

Three Cases of Joint Disease Beginning during Active Treatment of Syphilis

(With Special Plate)

The following is an account of three cases of joint disease in syphilitic patients arising during active treatment. The type of treatment was different in each case. The first case has the particular feature that one of the lesions is Charcot's disease of the vertebral joints. Two of the patients, the first and second, were treated with the new pentavalent arsenical neocryl, described in the *British Medical Journal* of May 23rd, 1936.

1. A man, aged 53, gave no history of infection; he stated that for seventeen years he had had "lightning pains" in the legs. On June 3rd, 1935, he fell in the street with momentary loss of consciousness. There was also loss of power in the left leg. He recovered in a few moments and attempted to continue, but fell again.

Examination revealed marked tabes dorsalis. The Wassermann reaction was positive in the blood and cerebro-spinal fluid. From July 27th to August 9th, 1935, he had ten paroxysms of induced malaria, terminated on the latter date by one intravenous injection of 0.3 gram N.A.B. He subsequently received 28.5 grams of neocryl in ten weekly injections (September 27th to November 29th, 1935), and 30 grams of neocryl in ten weekly injections (January 31st to April 3rd, 1936). His general condition improved and, although very ataxic, he was able to get about the ward.

Lumbar puncture had been performed on four occasions between July, 1935, and January, 1936, by one of us (R. C. W.) without difficulty, and no abnormal condition of the spine was detected. On April 15th and 22nd, 1936, we unsuccessfully attempted lumbar puncture; it was observed that the spine was now extremely deformed. There was no pain, no marked interference with the movements of the spine, and no evidence of compression of the cord; the root pains were not increased. It was at first thought that his clumsy attempts to get about by leaning on beds might have produced the deformity, but the rapidity of its onset was against this explanation. An *x*-ray examination showed Charcot's disease of the spine (Fig. 1 on Plate). The hips were also noticed to be swollen, and radiological examination showed Charcot's disease of the left hip-joint with pathological fracture, the other hip being normal (Fig. 2 on Plate).

2. In a man aged 42 there was no history of infection, but the clinical examination suggested tabes dorsalis. The Wassermann reaction was strongly positive in the blood and cerebro-spinal fluid; Lange gold curve 5554321000. There were no obvious mental changes. From December 2nd to 12th, 1935, he had ten paroxysms of induced malaria, which were terminated on the latter date by 0.6 gram of N.A.B. injected intravenously. On January 14th, 1936, he complained of pain in the left hip, and said that his leg seemed shorter; previously his gait had shown no abnormality. On examination there was swelling of the left hip, but no marked tenderness; there was muffled crepitus on moving the joint, and one inch of shortening of the left leg. Trendelenburg's test was positive, and his gait was now very abnormal. An *x*-ray examination revealed Charcot's disease of the hip-joint with posterior dislocation. He subsequently received treatment with neocryl; there was, of course, no improvement in the established bony changes (Fig. 3 on Plate).

3. A bright, intelligent boy, aged 13½ years, with congenital syphilis, had no manifest involvement of the cardio-vascular or nervous systems, but there were well-marked stigmata (nose, shape of teeth and skull), and a persistently positive Wassermann reaction in the blood. He had received 3.45 grams of N.A.B. and 8.4 grams of bismuth from January 15th, 1935, to March 23rd, 1936. On March 30th, 1936, he stated that his knees were swollen, and an examination showed painless effusion into both knee-joints without any appreciable functional disability.

It is interesting, if rather puzzling, to observe that, although in the last-mentioned case active treatment with N.A.B. and bismuth did not prove effective in preventing the onset of this well-known hydrarthrosis of congenital syphilis, a similar condition in another case of congenital syphilis showed steady improvement under the same treatment.

We are indebted to Dr. L. Findlay, medical superintendent of Mill Road Infirmary, for permission to record these cases.

F. GLYN-HUGHES, M.B.,
Visiting Medical Officer, V.D. Wards, Mill Road Infirmary, Liverpool.

R. C. WEBSTER, B.Sc., M.D.,
Assistant Medical Officer, Male V.D. Wards, Mill Road Infirmary, Liverpool.

Adrenal Apoplexy

I am reporting this case of adrenal apoplexy on account of its rarity.

Case History.—A male, aged 30 years, farmer, was admitted to hospital on March 28th, 1936, with collapse and diffuse abdominal pain, which started the day before and was associated with vomiting and constipation. There was tenderness all over the abdomen, with a certain degree of rigidity and distension. No peristaltic movements were seen. Pulse was 90, and temperature 37.5° C. No history of trauma. The urine was watery with traces of albumin, but no other abnormality. Turpentine and soap enemas were repeatedly given, with no result. The surgeon then came to the conclusion that the case was intestinal obstruction, and decided to open the abdomen. This was done next day (March 29th), but nothing was found. There was no abdominal lesion, and nothing in the intestines or other abdominal organs. The abdomen was closed and the patient was given every sort of stimulant, but he got gradually worse until the pulse was 144 and the temperature 36.5° C., and he died twenty-four hours after operation.

Pathological Findings.—On post-mortem examination the body was found markedly muscular and very well built. All the organs were carefully examined for sepsis or inflammation, with negative result. There was no diphtheria in the nose, mouth, pharynx, or larynx. The lungs and heart were practically normal; no atheroma in the aorta or cardiac vessels. There was nothing in the alimentary tract except a certain degree of distension. The liver and spleen were practically normal. There was nothing in the kidneys, bladder, or genital organs. The central nervous system was also normal, and the cerebral vessels healthy. The only lesion was found in both adrenals, which were the seat of extensive recent haemorrhage destroying practically all the two organs, which were enlarged nearly to the size of a hen's egg. Histological examination showed diffuse haemorrhage, more marked in the medulla. No other lesion, either inflammatory or neoplastic, was found in the adrenals. The other endocrine organs did not show any lesion.

COMMENT

Haemorrhage takes place into the adrenals in the haemorrhagic diathesis; in leucocythaemia; as a result of mechanical injury; in chronic venous congestion; in toxic or infective diseases. In many cases the cause is obscure, as in this case, in which no obvious reason for the haemorrhage was detected.

My thanks are due to Dr. R. Scander, surgeon to the hospital, for giving me the clinical history of the case.

H. BARSOUM, F.R.C.P.Ed.,
Pathologist, Government Hospital, Alexandria, Egypt.

Reviews

REPORTS ON RHEUMATIC DISEASES

A second volume[1] of *Reports on Rheumatic Diseases*, from the British Committee on Chronic Rheumatic Diseases, under the editorship of Dr. C. W. BUCKLEY, makes a welcome appearance. In this volume Drs. Davidson and Goldie open with a valuable paper on chronic infective arthritis. Discussing classification they are unwilling to accede to a differentiation between focal and "true" rheumatoid arthritis, and wish still to keep an open mind on the relationship between acute rheumatic fever and the rheumatic group. They agree that osteo-arthritis is essentially a degenerative condition, and that if infection plays a part it is only to produce a mixed arthritis in the same joint. They are strong advocates of the importance of focal sepsis in chronic infective arthritis, and regard the joint lesions as manifestations of sensitization, not always to the same organism, though *Streptococcus haemolyticus* is the commonest. Some people are much less liable to sensitization than others. The authors do not regard the association of rheumatoid arthritis with tuberculosis as proven, but urge that the methods of treatment of pulmonary tuberculosis and chronic infective arthritis should be regarded as almost identical.

Dr. W. S. C. Copeman discusses the question whether a certain number of cases of rheumatoid arthritis may be due to a tuberculous infection. He quotes twelve such cases from the literature, and out of a series of forty-two describes twelve of his own in which he found evidence of tuberculous infection. He considers that the joint lesions are the result of sensitization by tubercle bacilli which are rapidly overcome in the tissues by the patient's high powers of resistance. Dr. G. J. Griffiths describes work being done at Buxton on the titre of anti-haemolysin, which supports the evidence for the aetiological symptoms of the haemolytic streptococcus in rheumatoid arthritis. Dr. Hinch reviews recent work in America, and indulges in some useful "debunking" of current theories of causation and cure. He points out the woeful lack of knowledge of the physiology of normal articular tissues. Observations on the course of untreated acute rheumatism throw grave doubts on the specificity of the salicylates. The satisfactory results from the hyperthermal treatment of recent gonorrhoeal arthritis show a welcome addition to our therapeutic armamentarium. Mr. Timbrell Fisher reviews recent work in surgery and orthopaedics in the prevention and treatment of deformity. He refers to the splinting of rheumatoid joints, but prefers light adjustable metal splints to plaster-of-Paris. Manipulation rightly receives a great deal of attention from modern orthopaedic surgeons, but the more elaborate operative procedures seem to be fading into the background.

Professor Dodds contributes a note indicating the lack of knowledge of the biochemistry of normal joints, and hopes for significant results from work at present being undertaken in his laboratory by Bywaters, who contributes an article on the metabolism of joint tissues, more particularly in relation to glycolysis. It would appear that one of the keys to the pathology of joint disease is the permeability of articular cartilage and synovial membrane. Drs. Elman and Mitchell examined forty rheumatoids and forty arthritics from the point of view of psychological background, but their conclusions are indeterminate except that rheumatoid arthritis tends to occur amongst anxiety and schizoid types. Dr. J. Race contributes a critical review of recent laboratory work, especially on the relation of *Streptococcus haemolyticus* and other organisms to rheumatoid arthritis. Dr. Buckley reviews recent work with gold salts and on periods of rest such as are enjoined in tuberculosis. He points out the possible ill effects of gold if not properly administered, and attributes these to idiosyncrasy or overdosage. He considers, however, that it may become an indispensable remedy once a standard method of therapy has been established. A notice of certain Continental papers on rheumatism concludes this volume.

The standard of the first volume is maintained, and the publication of these reports will do much to draw attention to the really valuable work which is being done in this country in the field of rheumatology and to remove a reproach, never really justified, that Great Britain was seriously behind other countries in the attack upon this all too common scourge. All those who are interested in rheumatism—and there must be few who are not, or should not be—will do well to study this volume, refer back to the first, and await with impatient expectancy the appearance of future volumes.

[1] *Reports on Chronic Rheumatic Diseases. Being the Annual Report of the British Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians.* Edited by C. W. Buckley, M.D., F.R.C.P. No. 2. London: H. K. Lewis and Co., Ltd. 1936. (Pp. 140. 10s. 6d. net.)

TRAINING FOR HEALTH AND ATHLETICS

The publicity given to the recent Olympic Games held in Berlin, persistently thrust before people whether they were interested or not, with accounts and photographs of athletic achievements, provoked some discussion as to the desirability of participation in athletics as a profession, a hobby, or an aid to maintenance of health. For those who want expert information on these matters an authoritative little handbook, entitled *Training for Health and Athletics*,[2] has been written by H. M. ABRAHAMS, himself a famous athlete, and his brother Dr. ADOLPHE ABRAHAMS, who is doctor to an Olympic team. It might be expected from the highly specialized nature of their experience that the book would be of interest only to the devotees of "super" athletics. On the contrary, it is most suitable not only for the athlete but also for the general reader who may be seeking some guidance on the particular form of exercise to meet his own needs. The early chapters deal in a general way with the physical and mental aspects of exercise, and discuss the various physical recreations and their appropriateness for different types of people. Although this part of the book is somewhat elementary, it should prove of value for schoolboys and older youths, who will readily accept views of such sound sense on health and hygiene coming from the pen of an athlete, while they might reject such advice from other sources.

The authors' remarks on violent exercise are expedient when one realizes the degree to which people will go to extremes in physical exercise. This is particularly so in cases of obesity, where a patient who refuses to trouble about exercise in its mildest forms is anxious to undertake skipping or fast running, which should be contraindicated for those who are of his weight. The authors are agreed that any form of strenuous effort should be prohibited in the early morning, because the body takes some hours to readjust itself after the effects of sleep and recumbency. This may explain the frequency of failure in systems of physical jerks done on rising. Having dealt with questions of "staleness," stiffness, the use of sugar, etc., the authors follow to the more specialized part of the subject and discuss actual training. They lay down no hard-and-fast system, but evolve that most suited to the needs of the individual athlete, and it is interesting to contrast their

[2] *Training for Health and Athletics.* By H. M. Abrahams and Dr. Adolphe Abrahams. London: Hutchinson and Co. Ltd. 1936. (Pp. 192; illustrated. 2s. 6d. net.)

open-minded attitude with earlier rigid systems which imposed an often intolerable regime on those in training. At one time when an excessive intake of fluid was the bogy of the trainer, a conscientious trainer would stay beside the bedside of his pupil to prevent him taking the water for which his dehydrated body was craving. This scarcely seems credible to-day, when the physiological requirements of the body are studied with consideration.

Apropos of athletic injuries, the reviewer cannot pass without comment the sweeping dismissal of the value of electrical treatment which is made. Obviously the authors are not aware of the real uses of electricity when scientifically applied, and have had no personal experience which would aid them in discounting misinformation on the subject. The remaining chapters give the advice of experts on matters of technique and form in sprinting and running and the various kinds of jumping. The concluding chapter on athletic equipment is most practical and necessary. A photograph of the famous Finnish runner, Nurmi, forms the frontispiece, and has as its caption, "The Perfect Machine." It was, however, a relief to find later in the text that above all an athlete should be trained to use his mind. To the uninitiated, perhaps, the book will convey no understanding of what inspires people to want to become record-breaking athletes, but for all that it is sound sense and reasonableness from cover to cover. It should fulfil amply the purpose for which it was written, and should be invaluable to youths in training, scout masters, and physical training instructors. A copy in every school in the masters' common room would fortify the staff against a "P.T." or games master who had a bee in his bonnet about the infallibility and universal applicability of his own particular system of training.

DERMATOLOGY

Another textbook on diseases of the skin has reached us from America. It must have had considerable success already on the other side of the Atlantic, for the copy of *Diseases of the Skin*,[3] by Dr. F. C. KNOWLES, now before us shows that it is in its third edition. There is not a great deal to distinguish this particular textbook from many others which have preceded it in making the transatlantic journey. It is full and competent and well illustrated. The author states that hundreds of articles and abstracts have been read, and that many months have been required in the effort to bring the present volume up to date. No doubt this is true, but very few references to original papers are included. That, however, is no great defect in a volume primarily intended for students and general practitioners.

Perhaps the most interesting section is the preliminary general discussion on special methods of diagnosis and treatment. No modern method is omitted, but the usefulness of the section would be increased if a few more practical details of the employment of various electrical devices were added. One omission which we think might be rectified is the absence of any reference to Sir Thomas Lewis's work on the vascular supply of the skin and the importance of histamine and its congeners in the production of the cutaneous response to inflammatory stimuli. As we remarked above, the book is well illustrated with photographs, most of which are of a high technical excellence, but there are no coloured plates. There are, however, eleven plates in monochrome which do certainly give a better idea of the conditions portrayed than ordinary photographs. The whole book is quite a sound production.

[3] *Diseases of the Skin.* By F. C. Knowles, M.D. Third edition. London: Henry Kimpton. 1936. (Pp. 640; 240 figures, 11 plates. 30s. net.)

THE ANAEMIAS

The second edition of Dr. JANET M. VAUGHAN'S monograph on *The Anaemias*[4] appears only three years after the first. Rapid advances are still being made in haematology, and though no major changes have become necessary the text has been thoroughly revised, four coloured plates have been added, and the book is some fifty pages longer. The anaemias are classified into four main groups: dyshaemopoietic, due either to deficiency of raw materials or to the effect of toxic substances; leuco-erythroblastic, associated with disease of the bones; haemolytic; and post-haemorrhagic. In the field of the dyshaemopoietic deficiency anaemias the advance of knowledge has pushed us into worlds not realized before, and when workers get their bearings further important advances may be expected. Greenspon, in his attempt to simplify the problem of pernicious anaemia by regarding intrinsic factor as a hormone and dismissing the need for a substrate or extrinsic factor, left too many facts unexplained, and his experimental results have not been confirmed by others. The majority still hold to Castle's original view that the intrinsic factor is a ferment. It is easy to understand that the absence of a digestive ferment may give rise to deficient assimilation of foodstuffs. On the other hand, absence of vitamins or other specific substances in the food may lead to deficient secretion of the digestive ferments. We are still uncertain whether diseases like pernicious anaemia, sprue, and pellagra are primarily digestive or primarily nutritional, but in any event they terminate in a vicious circle. It would appear that intrinsic factor is secreted from a much wider area than was at first stated by Castle, and it is difficult to understand just why the secretion of hydrochloric acid and intrinsic factor is suppressed in pernicious anaemia while other digestive processes proceed normally. In leuco-erythroblastic anaemia, a subject to which Dr. Janet Vaughan and Professor H. M. Turnbull have contributed so much, we are still only in the descriptive stage of knowledge, and we do not know why the blood-forming organs should be so profoundly modified or "irritated"—for example, by a small metastatic deposit.

Dr. Janet Vaughan handles all this material with a mastery which will be the envy of those who have felt themselves crushed by the weight of the literature, and the mild flavour of dogmatism and scepticism which pervades the book is by no means unpleasant.

EVERYDAY THERAPEUTICS

A student of men and affairs has stated that if anyone will put down his common daily personal experiences in plain language he will certainly produce an interesting book. The proposition finds an illustration in Dr. VINCENT NORMAN'S *Essentials of Modern Medical Treatment*,[5] for the book is a summary of what an individual medical practitioner has learned by personal experience and opportune reading. No doubt much of the story corresponds to the experience of other senior practitioners, but the virtue here is that the experience is recorded and is therefore available to junior members of the profession. Moreover, the information is presented in a readily accessible form; the various symptoms are stated in alphabetical order with in each case a discussion of the appropriate methods of treatment. There is no profession

[4] *The Anaemias.* By Janet M. Vaughan, D.M., M.R.C.P. With notes on Normal and Pathological Erythropoiesis by Hubert M. Turnbull, D.M., F.R.C.P. Second edition. London: Humphrey Milford, Oxford University Press. (Pp. 309; 29 figures, 4 coloured plates. 12s. 6d. net.)

[5] *Essentials of Modern Medical Treatment.* By Vincent Norman, M.D., M.R.C.P., F.R.C.S.Ed., D.P.H. London: Hutchinson's Scientific and Technical Publications. 1936. (Pp. 200. 10s. 6d.)

of novelty or originality, but modern developments in treatment are not neglected. Attention is directed principally to the more frequent incidents of practice, and there are no facile conclusions that what is new is necessarily an improvement on the old. In short, Dr. Vincent Norman has produced a plain, straightforward, honest story, born of his personal contact with the facts of medical practice, certain to be of service to many of his colleagues who have yet their experience to win, and not without value for purposes of comparison and reminder to those of senior standing. A commendatory foreword is from the pen of Dr. S. Watson Smith.

ABSCESS OF THE LIVER

In his introduction to a monograph on liver abscesses by P. HUARD and J. MEYER-MAY,[6] Professor Gosset of Paris states that the profession is indebted to the authors for a valuable contribution. We are in entire agreement with him. From their personal study of over 150 cases and from an exhaustive inquiry into the literature, MM. Huard and Meyer-May have produced a comprehensive and attractive volume which we think will become a standard work of reference. The volume is well illustrated with nearly a hundred clearly made line drawings. The authors deal with abscesses related to the liver, whether within the substance of or outside the organ, and in connexion with subphrenic abscess we are glad to notice the references to Mayo Robson and Moynihan, and the inclusion of a well-known diagram by Lord Moynihan. Of their 150 cases of hepatic abscess 138 occurred in the right lobe, and a preponderance of the right lobe over the left occurs throughout the statistics quoted—not, however, always so marked as in Huard and Meyer-May's series of cases. The monograph is divided into three sections—(1) anatomical, (2) clinical, and (3) therapeutic—and concludes with a series of case histories and post-mortem observations, and with an extensive bibliography.

The outstanding work of Sir Leonard Rogers in connexion with tropical liver abscess is given due recognition. The authors emphasize the importance of lipiodol injections in outlining the extent and ramifications of liver abscesses, and the help given to the surgeon thereby. They discuss in detail the indications for surgical treatment, and favour either local analgesia or basal anaesthesia, with numal and light ether for cases for which operation is required. They also discuss the various surgical methods in detail, and altogether this monograph is a most complete account of the subject. We congratulate the authors on an excellent piece of work, and recommend it to all who are interested in liver abscess or any of the many questions relating thereto.

Notes on Books

The little privately printed work *Illustrious Contributors to Public Health*, by Dr. CHARLES FREDERICK BOLDUAN, contains, as its subtitle indicates, a short account of the illustrious persons, from Moses to William Welch, whose names are carved on the new building of the New York Departments of Health, Hospitals, and Sanitation and the office of the Chief Medical Examiner. In addition to the names already mentioned the list includes Jenner, Ramazzini, Hippocrates, Paracelsus, Pinel, Lind, Farr, Howard, Lister, Florence Nightingale, Shattuck, Morton, Marion Sims, Koch, Behring, Pasteur, Leeuwenhoek, Ehrlich, Billings, Harvey, Bard, Semmelweis, Stephen Smith, E. B. Dalton, Walter Reed, Gorgas, and Hermann Biggs. The text is interspersed with ten portraits.

[6] *Les Abcès du Foie.* By P. Huard and J. Meyer-May. Paris: Masson et Cie. 1936. (Pp. 590; 98 figures. 65 fr.)

In his work on the Seasonal Periodicity of Epidemic Diseases,[7] especially poliomyelitis, Dr. G. HORNUS, assistant at the Institut Pasteur to Professor Levaditi (who writes the introduction), remarks that his object has not been to determine the causes of the periodicity of epidemic diseases, but rather to establish a certain relationship between the various investigations carried out on the subject. His conclusions are as follows. First, a special technique is required for the study of the periodicity of epidemic diseases, from which it emerges that poliomyelitis is an aestivo-autumnal disease which has an additional rise in its incidence in the spring. Secondly, the periodicity of epidemic diseases depends on variations in the environment in which three factors of a meteorological, cosmic, and telluric character take part. Thirdly, variations in the virulence of the pathological agent undoubtedly play a part in the epidemiology, but it is impossible at present to determine its importance. Fourthly, the mode of transmission is often responsible to some extent for the seasonal periodicity. In the case of poliomyelitis, however, this factor is very slight, if indeed it exists. Finally, there is to-day an increasing tendency to attach more importance to the changes in the organism in the seasonal periodicity of epidemics.

Professor H. KÜRTEN considers that in writing histories of tuberculosis too little attention is paid to authors in antiquity and the Middle Ages; yet much is to be found written by them which, except in regard to the most modern changes in pathology and treatment, approximates closely to present views. In *Zur Diagnostik, Therapie und Prognostik der Lungentuberkulose im Altertum und Mittelalter* (Leipzig, G. Thieme, RM. 1.30) he has therefore collected quotations from many such authors (Hippocrates, Galen, Aetius, Celsus, Gaddesden, Rhazes, etc.), which illustrate their views on the diagnosis, prognosis, and treatment of phthisis in regard to climate, rest, exercise, diet, and psychotherapy. This little pamphlet and the references contained in it should prove useful to deeper students of tuberculosis. As many of the quotations are in Latin, however, and no translations are given, a good knowledge of that language will be necessary to obtain full benefit from the publication.

The Fieldhouse series of students' books on book-keeping and kindred topics have a well-deserved reputation for clearness of explanation, and this is not belied by *Income Tax Simplified*, which has now reached its thirteenth edition.[8] Its seventy-odd pages are packed with brief but usually adequate notes on most of the points that arise to trouble those taxpayers who do not hand over the preparation of their statements and returns to a professional accountant. Illustrations, including specimen returns, have been carefully chosen and are set out clearly. One note which might mislead practitioners might perhaps be corrected here. It is not the fact that after a change in proprietorship arising out of a retirement or introduction of a partner "the return must still be based on past profits." If all concerned desire it, the old practice can be regarded as having ceased and the new one consequently assessed for its first year on the current year's basis—a point of some importance in medical practices.

The fifth edition of the *British Waterworks Directory*, published by the British Waterworks Association, contains a mass of information relating to waterworks undertakings in Great Britain and Ireland, and in some of the British Dominions beyond the seas. The book is in four parts: (1) directory; (2) statistical tables; (3) chemical and bacteriological analyses; and (4) general information. These several parts are distinguished by being printed on differently tinted paper.

[7] *La Périodicité Saisonnière des Maladies Epidémiques et en Particulier de la Poliomyélite.* By G. Hornus. Paris: Masson et Cie. 1936. (Pp. 138. 28 fr.)

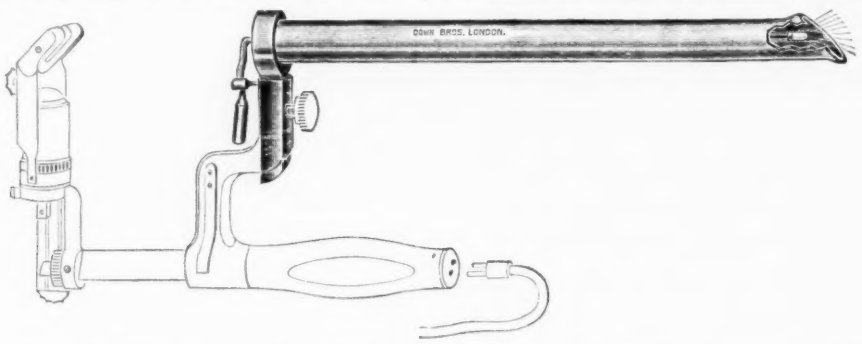
[8] *Income Tax Simplified.* By Arthur Fieldhouse and E. Ewart Fieldhouse, M.A., LL.B. Thirteenth edition, 1936-7. Huddersfield: A. Fieldhouse; London: Simpkin Marshall Ltd. 1936. (Pp. 98. 1s. 6d. net.)

Preparations and Appliances

OESOPHAGOSCOPE FOR SOUTTAR'S TUBES

Mr. J. B. CAVENAGH (Worcester) writes:

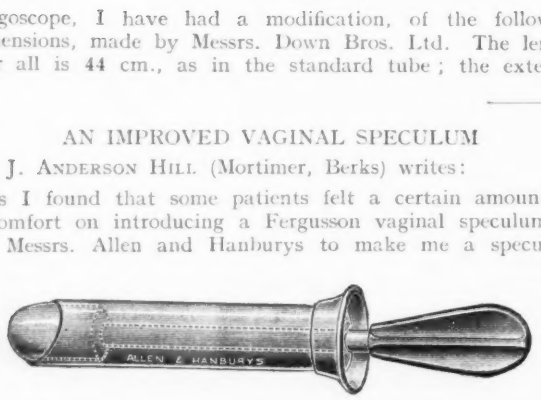
Having encountered on several occasions the necessity for the insertion of Souttar's tubes in cases which would not admit, without risk, the passage of the standard size oesophagoscope, I have had a modification, of the following dimensions, made by Messrs. Down Bros. Ltd. The length over all is 44 cm., as in the standard tube; the external diameter of 1.5 cm., as against 2 cm., still admits the passage of all sizes of the Souttar's spiral spring tubes; while the external circumference of 6 cm., as opposed to 7 cm., permits its use in certain cases in which one could not otherwise adopt this excellent method of oesophageal intubation. The tube is fitted with distal illumination, but can, of course, be employed with the Brünnings handle, if desired.



AN IMPROVED VAGINAL SPECULUM

Dr. J. ANDERSON HILL (Mortimer, Berks) writes:

As I found that some patients felt a certain amount of discomfort on introducing a Fergusson vaginal speculum, I got Messrs. Allen and Hanburys to make me a speculum with an obturator, similar to that used with a rectal speculum, as shown in the accompanying illustration.



This addition has proved to be very easy to handle, and has greatly facilitated the passing of the speculum.

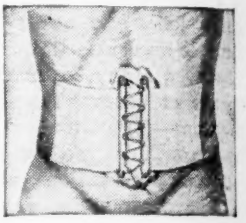
AN INDUSTRIAL EYE SHIELD

Dr. C. G. KAY SHARP (Leeds) writes:

Mining is one of the principal causes of industrial blindness. There is not at present any device which is completely satisfactory as a protection against flying pieces of coal or stone. The factors which a miner's eye shield must embody are: (1) no diminution of illumination; (2) free ventilation in front of face; (3) in use or out of use without removal; (4) strength—a fragile apparatus would be useless to a man using a pick and shovel; (5) ease with which it can be put on and off; (6) light weight. These factors are embodied in a device which has been made for me by Safety Products, Ltd., 44, Hatton Garden, London, E.C.1. It consists of a flexible fibre head-band, with a sliding adjustment at the back, so that it can be made to fit any head by slight pressure at the sides. On the front of the head-band is a metal plate, to which is fitted a metal projection carrying a double ball-and-socket joint. At the distal end of the ball-and-socket joint is an oblong metal frame, carrying the protective material—laminated glass, in the case of a miner's protector, and mica or gauze in the case of other trades. The shield (without the head-band) can be fitted to a miner's helmet. The advantage of the shield being carried on a ball-and-socket joint is the ease with which the protector can be placed in any required position, or turned back over the head when not required. In addition, the protector is carried well away from the face, allowing free ventilation. The fibre head-band, with the sliding adjustment, is strong, light, and can be fitted to any head with a minimum of trouble. When fitted it can be put on and off with the ease of putting on and off of a hat. When not in use the sliding adjustment allows of considerable reduction in size for carrying in the pocket.

A DRESSING FASTENER

The expedo fastener (patented) is a simple but effective appliance in the form of a pair of special safety-pins devised to shorten the time of dressing and subsequent inspection of wounds, to economize bandage material, and to eliminate disturbance painful to the patient. The safety-pins are so constructed that they can be approximated under tension by a simple method of cross-lacing. Instead of a "many-tail" or the usual roller bandage of from four to six yards long, a single piece of material such as calico, domette, flannel, etc., is slipped under the part to be bandaged and the fasteners inserted in a position to give tension when laced up. Adhesive plaster may be used instead of bandage material (see illustration), and each method gives close approximation of wound edges. Inspection and re-dressing of the wound is simple and rapid, with little or no disturbance to the patient. The cord, when laced as shown in the illustration, is self-retaining. The sole makers and patentees are Messrs. Alexander and Fowler, Pembroke Place, Liverpool.



AN ANTISTREPTOCOCCAL DRUG

Colsulanyde (sulphanilamide Crookes) is a synthetic compound recommended for the treatment of streptococcal infection of the blood. Researches on the chemotherapy of generalized bacterial infections in human beings yielded almost uniformly negative results until recently, when 4-sulphonamido-2:4-diamino-azobenzol (prontosil) was discovered to be efficacious against streptococcal infections. This action was first shown in animals, and was also confirmed in clinical practice. The clinical results reported have been very remarkable. Further research has shown that simpler but allied compounds can produce similar effects. Messrs. Crookes have investigated the action of the simpler compound *p*-aminobenzene-sulphonamide, and report favourable results with this drug in the treatment of both animal and human infections. They state that the new compound is considerably less toxic than the original azo dyestuff. The great potential importance of this compound is obvious. The drug is administered by mouth in 1-gram doses, and quantities up to 6 grams a day can be given.

HALIBUT OIL OINTMENT

Collosol brand compound halibut oil ointment (the Crookes Laboratories) contains 500 international units of vitamin A per gram. A number of clinical investigators have reported that oils containing vitamin A promote healing of ulcers and burns. The ointment described provides vitamin A in an odourless form and in a consistency convenient for application.

A NOTE ON TOXAEMIA IN PREGNANCY

BY

R. C. BUIST, M.A., M.D., LL.D.

CONSULTING GYNAECOLOGIST, DUNDEE ROYAL INFIRMARY; CHAIRMAN, CENTRAL MIDWIVES BOARD FOR SCOTLAND

Perusal of a recent volume on this topic has suggested the description of our present professional confusion as a portentous flatulence of opinions arising from an undigested mess of hospital and laboratory reports. It may therefore be useful to collect some of the directive flotsam of fact from the historical current of this *opprobrium medicorum*.

Circumstances of Civilized Women

The phenomena may be summarily ranged under the title of failure during pregnancy in civilized women of the mechanism of metabolism to bear the burden laid upon it. So far as our ignorance permits judgement, such failure is so rare in animals and "nature" peoples that the potent underlying factors cannot be deemed specific either to pregnancy or to human nature, and must be sought in the difference of the circumstances of civilized women. Despite the School of Salern, civilization constrains the excretory functions, and custom dictates diet, drink, and dress. In pregnancy the question is posed whether the constitution inherited after precedent adaptations is so fitted to the present environment as to be worthy of transmission to another generation. Death is an answer in the absolute negative, and a difficult survival shows a borderland case. In this dilemma of imbalance between the inherited mechanism and its burden the prophylact may select either horn for his preventive effort, but the momentum of the more recent civilization is more easy to alter, and methods which lighten the metabolic load promise quicker results.

In hospital statistics tabulation of results in the order of pregnancy-numbers shows in the first part of the series rates decreasing from that of the primipara; an improvement like that of athletic or other records with a series of eliminating heats. In the latter part of the series increasing rates point to the entrance of a new factor, which may be an acquired weakening of the metabolic mechanism. It is possible that the hospital records have superposed two sets of superficially resemblant cases—one eclamptic, the other nephric.

The Metabolic Overload

The most useful directive statistics are illustrated by two sets from Germany, relating to the case-frequency of eclampsia. The first shows that in East Prussia the incidence of eclampsia in townswomen is six times as heavy as that in women in the surrounding country. The second shows that under the conditions of severe restriction of food and other difficulties during the war the eclampsia case-rate in Baden was lowered one-third, and that it rose again on the return to less stringent life after the end of the war. In the actual production of eclampsia differences of nutrition and living are preponderant. The metabolic overload of civilization finds its most dramatic expressions in the hyperemesis and eclampsia of the pregnant; but, apart from pregnancy and excluding the immediate responses of acute vomiting and diarrhoea, the overload takes its toll of men and women alike. Crile has ascribed "the diseases of civilized man" and their increasing frequency to disorder at some link of the endocrine chain, and breaks the chain by denervation of the adrenals. Whether this will afford relief to women who break down in pregnancy is a question for future study.

There is evidence that the inherited metabolic mechanism behaves differently during pregnancy. It is tuned to "pregnancy pitch," but the search for exact knowledge of the change has been hampered hitherto by the attractions of the human problem and its special pathological phenomena. Thirty years ago (*British Medical Journal*, 1906, i, 1534) the general result was stated thus: "The processes both of ingestion and excretion, . . . though remaining well within physiological limits, exhibit a tendency to more leisurely or economical performance." In the nitrogenous exchange particularly a positive balance is more readily attained. The recent summary of Garry and Stiven is less emphatic, but it is clear that the defect in maternal diet is not grossly quantitative, and calorie value is not the essential measure of merit. The crude assertion that "the mother must eat for two" is not the intelligent woman's guide to nutrition.

It is true that the mother must nourish two, and in the symbiosis of mother and child, if there is a contest of needs, the embryo is dominant, its younger cells ensuring that its essentials are rigorously exacted even at the cost of the mother. In plenitude the child may add to its bare necessities a reserve of nutriment which has an important influence on its capacity for post-natal life, but should there be mineral deficiency the foetus will be served and maternal anaemic or osteomalacic conditions may occur.

At necropsy the terminal picture, though dominated by acute focal necrosis in the liver, shows congruent features in the rest of the body. Acute focal necrosis is not a specifically human but an animal event, and in its various types, when the aetiology is definite, it is linked to some form of poisoning, either primary or secondary. While with poisons like phosphorus fatty necrosis is typical, colliquative forms are frequent, and differences of local distribution round the central vein or about the portal space are recognized. It may be that a difference in the route by which the noxa arrives at the liver is indicated. In relation to pregnancy, association of the central type with hyperemesis and of the portal type with eclampsism is usual. These associations have depressed somewhat the medical outlook, and it must not be forgotten that even with delirium and jaundice and the full clinical picture of icterus gravis the process may be arrested and recovery occur.

The fluid store of the body has to be increased in pregnancy; and in toxaemias, especially of the hyperemesis or hypersalivation types, a stage of acute dehydration may occur, and since the concentration of a noxa sometimes intensifies its action the persistent treatment of toxaemias by infusion is justified, and at times the clinical gain is astounding. Notwithstanding, pregnant women should not be burdened by a routine prescription of excessive water-drinking.

Except for the interruption of pregnancy in hyperemesis, the surgical era in obstetrics has apparently yielded no betterment in the case mortality of toxaemia. In anuria, decapsulation of the kidney has sometimes seemed to give a starting-point for recovery.

Need for Integration and Sifting

In the treatment of the individual case of eclampsia the methods which, in long series, have given the best results are those, such as Stroganoff's, based on the nerve sedatives. For the arrest of a case in an early stage of progress to eclampsia, systems such as an exclusive milk regimen show frequent but not universal success.

In 1930 Whitridge Williams said (*Obstetrics*, sixth edition, p. 668):

> "It is evident that the cause of eclampsia has not been discovered, and that the peace of mind of all concerned would have been increased had many of the so-called contributors never written, or at least withheld their contributions sufficiently long to submit them to ordinary self-criticism."

A statistical advisory committee might be useful, but an attempt at the integration of the demonstrated facts is overdue, and a ruthless criticism and scrapping of the irrelevant is necessary to clear the ground.

A league against deafness has been founded at Nice with Professor Portmann of Bordeaux as president of honour and Dr. Robert Morch as president. Further information can be obtained from the Secretariat de la Ligue contre la Surdité, Palais Doria, 143, Promenade des Anglais, Nice.

British Medical Journal

SATURDAY, NOVEMBER 14th, 1936

SOME ENDOCRINE PUZZLES

Disorders of one gland so notably affect the whole of the endocrine system that it would be more accurate to speak of polyglandular syndromes than to attribute any particular symptom-complex solely to deranged function of a single component of this system. For example, the various symptoms of the menopause have until lately been attributed to the declining function of the ovary, whereas evidence is now accumulating that some at least of the symptoms—the hot flushes, for instance—are associated with compensatory over-activity of the pituitary. At one time the thyroid was considered to be the leader of the endocrine orchestra. But during the past few years the pituitary has displaced it from this position and has been found to control the cyclical activity of the gonads, the process of lactation, the secretions of the adrenal cortex and of the thyroid, and in all probability the endocrine functions of the pancreas. The pituitary thus appears to be the master gland, the headquarters of the endocrine system, whence all commands are issued. Recently, however, it has been demonstrated that not only does the pituitary control the ovaries but that an excess of ovarian follicular hormone may exert a profound inhibitory effect on the pituitary, even to the extent of producing a tumour of its inactive chromophobe cells. Not only is there a reciprocal balance of activity and inhibition between two components of the endocrine system, such as the ovary and pituitary, but it appears that certain endocrine secretions circulating in the blood may induce the development of factors in the serum inhibitory to their own activity. Thus, injection of thyrotropic and gonadotropic pituitary hormones are capable of inducing anti-thyrotropic and anti-gonadotropic activity in the animal's serum.

These intimate interrelations make it difficult to locate the gland primarily responsible for certain endocrine syndromes. Perhaps the best example of this difficulty is Cushing's syndrome. Originally this symptom-complex was attributed by Cushing to an adenoma of the basophil cells of the pituitary, but it was found almost invariably to be associated with either an adenoma or a generalized hyperplasia of the adrenal cortex. There are some, indeed, who believe the syndrome to be primarily due to the adrenal over-activity. Although it is probable that the primary lesion, whether in the pituitary or in the adrenal, always secondarily affects the other gland, as well as to some extent the thyroid and the gonads, it seems possible in a certain number of cases to determine the site of this primary lesion. Thus the adrenal lesion usually stimulates the gonads, especially when it occurs before puberty; pituitary basophilism usually leads to gonadal atrophy, loss of libido, and amenorrhoea. The degree and distribution of obesity are as a rule more marked in the pituitary than in the adrenal lesion. There are, however, symptoms common to both these syndromes—the hirsutism, the reversion to male type, and the raised blood pressure—and it is these which make the diagnosis of the site of the lesion so difficult. Nor does this complete an already complicated story. Marshall and Verney[1] have shown that ovulation in the rabbit may be induced purely as the result of electrical stimulation of various parts of the central nervous system. Friedgood and Pincus[2] claim to have obtained the same results by faradic stimulation of the cervical sympathetic nerves, and Theobald[3] has postulated a hypothalamic centre responsible for controlling menstruation in the human female. The involvement of the nervous system in endocrine activities is no new conception. We need only refer to the sympathomimetic action of adrenaline and the various humoral mechanisms for the transmission of nervous impulses. It is probable that nervous centres are stimulated by hormones circulating in the blood with which they are supplied, and that, conversely, impulses arising in such centres regulate the secretion and storage of the active principles of the various endocrine glands.

The practical importance of realizing the complications of this neuro-endocrine system lies in the decisions which must be made in regard to treatment. Taking as an example the pituitary–adrenal syndrome, the following lines of treatment are available. (1) The identification and removal of an adrenal cortical tumour, if present—if there are adequate indications this is probably the most satisfactory form of treatment. (2) Denervation of both adrenals: this has recently been advocated by Crile and his co-workers[4] as a means of diminishing the part played by the adrenals in the general endocrine picture. The operation, however, is not simple, and it would seem disproportionately severe for the sometimes rather hypothetical indications for which it may be undertaken. Its efficacy needs to be very firmly established before it is generally adopted. (3) Deep irradiation of the pituitary or adrenals: Lawrence[5] reported a typical case of Cushing's syndrome in which the symptoms disappeared after the application of *x* rays to the pituitary. Before any such measures are undertaken conditions such as arrhenoblastoma of the ovary, testicular new growths, pineal tumours, or hypothalamic lesions should be excluded.

[1] *Journ. of Physiol.*, 1935, lxxxv, 12.
[2] *Endocrinology*, 1935, xix, 710.
[3] *British Medical Journal*, 1936, i, 1038.
[4] *New York State Journ. Med.*, 1936, xxxvi, 475.
[5] *Proc. Roy. Soc. Med.*, 1934, xxvii, 271.

See also articles in *British Medical Journal* now appearing under the general heading "The Endocrines in Theory and Practice." The series began on October 17th, 1936.

TRACHOMA THROUGH THE AGES

Trachoma is a disease of the eyes which has brought misery and suffering to untold millions. It is one of the oldest of known plagues. It has run true to type for some six thousand years. Scores, nay hundreds, of workers have searched long and laboriously for the secret of the determining cause of the disease. Time and again great hopes have been aroused by the publication of what appears to be a successful issue of some careful piece of research work. But extended and controlled tests by other workers have all too certainly scattered these hopes. The Pharaohs knew of the disease, and the medical priests of the times recorded their treatment. The actual medicaments and instruments used by them in their handling of the disease and of its sequelae have been recovered from their tombs. The Greeks knew it well, and they appear to have invented a form of operation, for the relief of the inturned eyelashes that cause such distress, that has been practised until this day. In the Middle Ages Western Europe knew it, and suffered grievously from its introduction by the returning Crusaders. St. Francis of Assisi clearly suffered from the disease, which he contracted during a visit to the East, and the severe scarring that followed left him almost blind. Again, during the Napoleonic campaigns in Egypt there was a re-entry into the West, and the ravages of trachoma among the armies in Egypt contributed not a little to the failure of the grandiose schemes of the dictator of the day for his mastery of the Orient. To-day it is still one of the major plagues of Egypt. It is a pest in the Holy Land. It is the common enemy of good sight in far Cathay. It has even infected the New World.

Such is trachoma: a world-wide scourge of ancient and modern days ; the most prolific source of sore eyes, of gross disfigurement, and of blindness. It has been known in all its manifestations for generations, but it is still as mysterious in its real origin as in the days of the Pharaohs or of Celsus. It is appropriate that the story of trachoma should be told by Mr. A. F. MacCallan, who for so many years was the director of the Egyptian Government ophthalmic hospitals, who inaugurated the modern campaign in that country for the control of the disease, and whose experience of its symptoms, its effects, and preventive measures is unsurpassed. In his book on the subject[1] he has embodied his Hunterian Lecture, delivered this year before the Royal College of Surgeons of England, on the surgery and pathology of trachomatous conjunctivitis, and much else that is germane to the understanding of trachoma. He deals first with the general symptoms of the disease, its mode of infection, the common age of onset, and the incubation period. Then he proceeds to the detailed examination of the clinical manifestations, with his well-known four stages: (1) lymphoid follicles or subepithelial lymphoid infiltration ; (2) bleb-like excrescences which burst on pressure ; (3) papillary hypertrophy; and (4) connective-tissue formation. This last stage of its progress is developed in his third and fourth chapters on the sequelae and complications of trachoma and, one might add, of its miseries. There follow chapters on differential diagnosis, treatment, pathology, epidemiology, and one on history. The subject-matter of each section is complete in itself, yet each follows as a necessary development of the author's story. There are a score of beautifully drawn and reproduced illustrations, many of them in colour.

This monograph will be of the greatest value to ophthalmologists, and especially to those working in the East, where the disease is endemic. It forms a fitting mark of the author's presidency of the International Organization against Trachoma, to the members of the executive committee of which his volume is dedicated.

[1] *Trachoma.* By A. F. MacCallan, M.D., F.R.C.S. London: Butterworth and Co. Ltd. (21s.)

THE NOBEL PRIZE

As was announced in last week's *Journal,* the Nobel Prize for medicine and physiology for 1936 has been divided between Sir Henry Dale and Professor Otto Loewi, a fitting recognition of the important part played by the research worker in medical science. Delivering the first Dixon Memorial Lecture two years ago,[1] Sir Henry Dale pointed out that the suggestion that autonomic nerves transmitted their effects by releasing at their endings specific substances which reproduced their action was first made by T. R. Elliott. Elliott suggested that sympathetic impulses released adrenaline, or an adrenaline-like substance, at the endings of sympathetic nerves, basing this hypothesis upon the resemblance between the effects of adrenaline and those of stimulation of the sympathetic nervous system. Dixon concluded that if this were true for the sympathetic an analogous mechanism would be used by the parasympathetic nerves. In an account of the proceedings of the Section of Physiology at the Annual Meeting of the British Medical Association at Toronto in 1906, we published the following abstract of Dixon's remarks: " Professor W. E. Dixon gave an account of his experiments on vagus inhibition. He was of opinion that the heart contains a substance—' pro-inhibitin '—which, as a result of vagus excitation, is converted into a chemical body—' inhibitin.' This substance, combining with the heart muscle, results in cardiac standstill." Dixon thought that the substance transmitting parasympathetic impulses was something like muscarine. At the same meeting[2] Hunt and Taveau described the intense activity of acetylcholine. Dale investigated the actions of acetylcholine in 1914, but it was not till fifteen years later that the substance could be isolated from an animal organ in large enough quantity to be identified chemically.[3] Loewi showed that stimulation of the vagi in the perfused amphibian heart led to the appearance of a substance which could readily inhibit a second heart receiving the perfusion fluid from the first. This substance was finally shown to be acetylcholine. Further work has revealed that acetylcholine is liberated at parasympathetic endings and at sympathetic ganglia on stimulation of preganglionic fibres. The work of Henderson and Wilson[4] suggests that

[1] *British Medical Journal,* 1934, ii, 1161.
[2] Ibid., 1906, ii, 1788.
[3] Dale and Dudley: *Journ. Physiol.,* 1929, lxviii, 97.
[4] *Quart. Journ. Exper. Phys.,* 1936, xxvi, 83.

acetylcholine is also liberated at synapses in the central nervous system, and Dale and his co-workers[5] have shown that it is liberated on stimulation of the motor nerves to voluntary muscles. Dale introduced the convenient terms "cholinergic" and "adrenergic" for describing the nerves of the autonomic system. It is known that eserine protects acetylcholine from the inactivating effect of the enzyme cholinesterase, which is present in the blood, and it has been suggested that this mechanism explains the beneficial effect of prostigmin (an analogue of eserine) in myasthenia gravis.[6]

As each year passes the biochemist continues to enrich our knowledge of the normal and of the abnormal—one recalls the work on synthetic carcinogenic and oestrogenic substances—and it cannot be doubted that the influence of such knowledge on the development of medicine will increase as time goes on. Warm satisfaction must therefore be felt with the choice of two outstanding workers in this field, Sir Henry Dale and Professor Loewi, as recipients of the Nobel Prize for 1936.

VITAMINS AND THE HEALING OF FRACTURES

In *Studies on the Healing of Fractures*,[7] with special reference to the significance of the vitamin content of the diet, Dr. John Hertz of Copenhagen gives a detailed account of his investigations on this subject. The book, translated from Danish by Dr. Hans Andersen, is a model of thoroughness and precision; it is beautifully illustrated. It opens with an interesting historical survey of existing knowledge wherein the first observation concerning the influence of vitamin deficiency upon the healing of fractures is attributed to Richard Walter, chaplain to Lord Anson's naval expedition round the world in the years 1740–44: "On the passage round Cape Horn to Juan Fernandez the crew suffered severely from scurvy. The chaplain made the remarkable observation that fractures as well as ulcers or wounds that had healed long ago would recur in sailors suffering from scurvy. . . ." Touching the fractures in particular, Walter says: "Nay, what is still more astonishing, the callous of broken bone, which had been completely formed for a long time, was found to be hereby dissolved; and the fracture seemed as if it had never been consolidated." As a result of his historical survey Dr. Hertz found that all investigators were in agreement that "vitamin C deficiency is a very strong factor in the retardation or prevention of the healing of a fracture." Opinions differed as to the influence of deficiencies of vitamin B and of vitamin A, while there was general agreement that the disturbances in the healing process demonstrable in the rachitic organism are not due to defective capacity for new formation of tissue, but to failing calcification in the new-formed tissue. As to the effects of preparations of vitamin D upon the healing of fractures, when given in moderate dosage, there was no agreement; it was, however, generally agreed that toxic doses of vitamin D retarded healing. Having thus cleared the ground Dr. Hertz proceeds to describe his own methods of observation and to record their results. He devised a special forceps by means of which fractures of the fibula were easily produced without injury to the skin and underlying tissues and without displacement of the broken ends of the bone, precautions on which he lays emphasis. He discusses the biology of the elements of connective tissue, and expresses himself as in agreement with the Hansen-Häggqvist syncytial theory. The healing of fractures in normal guinea-pigs is then described and compared with that in guinea-pigs receiving an insufficiency of vitamin C (1/4 c.cm. of orange juice as compared with 4 c.cm. in the controls); the examination of pairs of animals—one of each pair receiving a sufficiency, the other an insufficiency of the vitamin—being made at intervals of three days up to fifty days after the operation. The same procedure is followed in his study of the effects of insufficiency of vitamin B_1+B_2, of vitamin A, of vitamin D, and of vitamin A and D together, rats being used for this part of the work. The healing of fractures in rats treated with toxic doses of vitamin D is then described, and a convenient summary of the work is given in a final chapter. The results arrived at were as follows:

"Vitamin C deficiency inhibits the traumatic inflammatory reaction which introduces the process of fracture healing; it also inhibits the power of the non-differentiated connective tissue to differentiate into osteoblastema; and, finally, it inhibits the production of collagen; it also gives rise to excessive calcification in the new-formed osteoid trabeculae. B_1-B_2 insufficiency is not found to have any influence upon the course of fracture healing. Vitamin A deficiency alone as well as a combined vitamin A and D deficiency give a defective formation of cartilage in the callus. Rickets gives rise to a violent hyperproduction of cartilage and osteoid tissue in the callus, but the capacity of the new-formed tissue for depositing lime salts is exceedingly poor. Finally, continued administration of toxic doses of vitamin D brings about a destruction of the cartilage formed in the callus, the broken-down cartilage turning again into undifferentiated connective tissue; this connective tissue then undergoes direct ossification; and this direct ossification proceeds very briskly."

THERAPEUTICS OF DRUG HABITS

An interesting review of this subject was given by Dr. Alexander Lambert in a recent lecture to an American audience.[1] He considered the treatment not only of the better-known forms of addiction such as chronic alcoholism and morphinomania, but also less notorious addictions such as over-indulgence in hypnotics. We are fortunate in this country in that we have relatively little experience of frank addiction to morphine, heroin, and cocaine. It is, however, generally agreed that the hypnotic habit is on the increase, and, since everyone knows that it is not easy to break off from dependence on hypnotics, information on this subject is of interest. The comparative study of the pharmacology of hypnotics is rendered difficult by their excessive number, and it is particularly hard to discover their relative safety as regards liability to produce dangerous intoxication or drug habit. The examination of statistics on this subject merely informs us that the best-known drugs are most often abused, information which is neither surprising nor helpful. In such a case the chief guide must be judgements based on wide experience, and since Dr. Lambert's clinical experience has extended over half a century, his opinions are well worth consideration. He describes

[5] *Journ. of Physiol.*, 1936, lxxxvi, 353.
[6] *British Medical Journal*, 1935, i, 463, 480.
[7] London: H. Milford, Oxford University Press. (15s.)

[1] Lambert, Alexander, M.D.: Therapeutics of Drug Habits. *New England Journ. Med.*, July 9th, 1936, p. 72.

chloral hydrate as one of the best hypnotics, and suggests that in many cases evils attributed to its use are due to the cumulative action of the bromides with which it is so often combined. This seems to us an important observation in view of the paper on bromide intoxication which appears in our opening pages this week. As regards the barbiturates he believes that some forms are more dangerous than others, but that all are liable to poison and pervert the personality in some patients. He mentions a peculiar effect occasionally produced by sodium amytal. Some persons when first awakening after the use of this drug do not clearly separate their waking from their sleeping consciousness and may be pugnacious and even dangerous for a short period. The author recommends the use of picrotoxin in the treatment of acute barbiturate poisoning and also the use, in the recovery stages, of a new sedative drug di-phenyl-methyl-pyrazoline, which is an antipyrine derivative and is sold under the trade name of rossium. Dr. Lambert makes favourable mention of the carbamide group of hypnotics, of which bromural and sedormid are examples, and evidently considers these safer than most if not all barbiturates. In regard to the causation and treatment of morphinomania Dr. Lambert gives a large amount of precise and interesting information. The times needed to produce addiction are: for heroin seven to ten days, for morphine twenty-four days, for dilaudid a little longer than morphine, and for codeine more than six weeks. He has had personal experience of the use of all the well-known methods of treatment of morphine addiction. For many years he employed the belladonna hyoscyamus treatment and later devised the treatment based on substitution of codeine for morphine. Recently he has used rossium, and is of opinion that it reduces the withdrawal symptoms and the period of hospitalization more than any previous method.

TUBERCULOSIS BACILLAEMIA

About a year ago we had occasion to review the report of the Health Organization of the League of Nations on the work of Dr. Ernst Loewenstein in connexion with tuberculosis bacillaemia.[1] His criticism of the report led to replies by the bacteriologists concerned,[2] and the discussion was then closed by Dr. Madsen, the conclusion being that Loewenstein's findings could not be confirmed. In a recent publication[3] the latter describes at length his methods and results in tuberculosis and other diseases, and discusses the relation of his findings to the pathology of tuberculosis, immunity, and allergy. Chapters are included on the clinical aspects of bacillaemia in connexion with polyarthritis, phthisis, and skin tuberculosis by Professors C. Reitter, Wilhelm Neumann, and Otto Kren respectively. Loewenstein's claims are by now too well known to call for recapitulation here. It need only be stated that in spite of the negative results obtained by numerous distinguished bacteriologists, he adheres to the position he has taken up. Loewenstein's criticism of his opponents does not always suggest a strictly scientific approach, and factors are evoked which it would be simple to confirm or refute. He criticizes the Health Organization's work on the score of the relatively small number of cases investigated (several hundred). In regard to Saenz's negative findings in rheumatism, he points out that no statement was made as to the type of disease—positive results can only be expected in the acute polyarthritic form. K. A. Jensen's negative results are dismissed as probably due to the tests being carried out, not by himself, but by his assistants or laboratory technicians; and the lack of accord in the types of bacilli injected by Stanley Griffith at Cambridge and isolated in the laboratory in Vienna as the result of dissociation and the difficulty of accurately determining types. Is it not illogical to blame the paucity of cases for the general negative findings in the blood while expecting the phenomenon of dissociation to show itself so prominently in a much more limited number of experiments? What strikes the general observer most in this controversy is that in the face of the numerous negative results by competent workers it never seems to occur to Loewenstein to consider the possibility of an error in his own laboratory. His attitude is perhaps well illustrated by his inclusion in the literature on tuberculosis bacillaemia of papers with positive results alone, because "completely negative investigations cannot lead to any progress."

[1] *British Medical Journal*, 1935, ii, 347.
[2] *Quarterly Bulletin of the Health Organization, League of Nations*, 1935, iv, 818.
[3] *Die Tuberkelbazillämie in ihrer Auswirkung auf die Gesamtmedizin*. By Prof. Dr. Ernst Loewenstein. Liepzig and Vienna: Franz Deuticke. (M. 20; geb., M. 23.)

LEGISLATION AGAINST NOISE

The London County Council is being recommended by its General Purposes Committee to promote legislation in this new session of Parliament to extend to nuisances occasioned by noise in the administrative county of London the provisions relating to the abatement of nuisances in the public health code for London, and in connexion therewith to provide a suitable definition of noise nuisance. The question has been raised at the request of the Battersea metropolitan borough council, and has been pursued in consultation with the Metropolitan Boroughs Standing Joint Committee. The noise which will be attacked is particularly that from plant and machinery in business premises, especially those where work is carried on during the night or early morning. There are plenty of recent precedents in local Acts in force in London which provide that a noise nuisance shall be dealt with in accordance with the provisions of the Public Health Act, 1875, relating to nuisances. Under the provisions of that measure, which have been re-enacted in the Public Health Act passed this year, it is the duty of the local authority, if satisfied of the existence of a nuisance, to serve a notice requiring the abatement of the nuisance, and, if necessary, to take summary proceedings with the object of obtaining an order for abatement or prohibition. According to the local Acts referred to a noise nuisance exists if any person makes or continues, or causes to be made or continued, any excessive or unreasonable or unnecessary noise which is injurious or dangerous to health; but if the noise occurs in the course of any trade, business, or occupation, it is to be a good defence that the best practicable means of preventing or mitigating it, having regard to the cost, have been adopted. The committee recommends that legislation for London along the lines of these precedents should be sought, and that this should be linked with provisions

relating to the abatement of nuisances in the public health code for London. The Corporation of the City and the Inner and Middle Temples have been informed of the proposal. It is a step in the right direction.

DIABETES MELLITUS AMONG AMERICAN EX-SERVICE MEN

The commonly held view that such factors as nervous strain or emotional upset constitute an important factor in the aetiology of diabetes mellitus has been examined in detail by statistical studies of diabetes in the American Veterans Administration. The first of these studies[1] did not produce convincing evidence that the psychological traumas and stresses of war played as important a part in the onset of the disease as did such factors as constitutional predisposition, obesity, faulty metabolism, internal secretory disturbances (dysthyroidism). This finding is not very surprising, as otherwise the incidence of diabetes in modern conditions would attain immense proportions. But given the basal condition of predisposition the contribution made by emotional stress becomes significant, and there is no doubt that once the disease is established the beneficial effects of the most careful scientific control with insulin and diet may be most gravely counteracted by emotional disturbance. In a more recent analysis of 1,663 living diabetic veterans of average age 43 years, the same author[2] found that 88.6 per cent. were true diabetics, 8.9 per cent. potential diabetics, 1.7 per cent. unclassified diabetics, and 0.8 per cent. cases of renal glycosuria. It was found that 8.7 per cent. gave a hereditary or familial history of diabetes, a figure comparing well with that of 10.6 per cent. given in the 1931 series of this author. The age grouping of the 1931 series (300 cases) showed that the age of onset was less than 40 in 70.9 per cent. and above 40 in 29.1 per cent. of the cases: the 1936 series showed that the disease set in at an earlier age than 40 in 80 per cent. and above 40 in 20 per cent. of cases. These findings contrast with Joslin's observation from much bigger series that the age of maximum susceptibility in males is 51 years, but the difference from the statistical point of view is most probably due to the fact that Matz was dealing with a selected sample of average age 43. In any case, there is little doubt that these figures demonstrate clearly that diabetes is a disease of youth as well as of middle age. Of the series of 1,663, 1,252 are receiving insulin treatment, and it is interesting to compare the duration of life of diabetics of this group with that of those not receiving insulin. Up to date, of the insulin-treated cases 25.4 per cent. have survived six months to five years, 31.5 per cent. five to ten years, 22.3 per cent. ten to fifteen years, and 20.8 per cent. fifteen to eighteen years. Of the 411 cases not receiving insulin (230 true diabetics), the percentages surviving the periods given above are 45.7, 29, 10.7, and 14.6. Reduced to a single comprehensive figure it is found that of those treated with insulin 43.1 per cent. have survived ten years or more, and of those not treated with insulin 25.3 per cent. have survived ten years or more. The percentage of cases successfully controlled by insulin in this series was actually less than that controlled by diet alone, but this was largely due to the fact that it was the less severe cases which were tried on diet without insulin. Although the tendency to develop diabetes becomes less in the later decades of life, the chances of dying from diabetes become greater in later life. Few diabetics, says Joslin, die when young or of diabetes *per se*: it is the danger of complicating illness which must be guarded against. In Matz's first series of 300, 79 per cent. of cases had complicating or co-existing disease, and in his later series of 1,663 there were 1,770 associated conditions. These complicating conditions are of interest as indicating what must be looked out for in diabetics. The most frequently met were cardiovascular disease, including hypertension, chronic tonsillitis, arthritis, chronic bronchitis, psychoneurosis, obesity, tuberculosis, renal disease, and thyroid disease. The continued follow-up of these considerable series of cases should lead to valuable knowledge not only about the continued efficacy of insulin treatment but also about the effect on the associated conditions of long-period control of the carbohydrate metabolism.

[1] Matz, P. B.: *Journ. Amer. Med. Assoc.*, 1931, lxviii, 591.
[2] Ibid., 1936, cvi, 2214.

PROTECTION FOR THE RETIRED DOCTOR

The leisure of the retired medical man may occasionally be disturbed by the thought that something he did or omitted to do—or is alleged to have done or omitted—during his last months or years of practice may bring forth a long-delayed result in the shape of a complaint or claim on behalf of a patient, with a threat of legal action at the back of it. To meet this possibility the Medical Defence Union, as will be seen from a letter in our correspondence columns from the president of that body, is extending its protection to its members after they have declared themselves to be wholly ed from practice. By a single predetermined and mputed subscription they can obtain complete co r for life against claims arising out of their previous medical practice while they were in full benefit as members of the Union. The payment made by the retired practitioner is to be adjusted according to the length of his previous membership. The scheme strikes us as being wise and economical, and no doubt it will be widely embraced by members of the Union on relinquishing their practices. A matter of dubiety that must always arise in the medical profession, as in some other professions, is when a professional man or woman can be said to have retired. Retirement is often a gradual process, the senior practitioner unloading his burdens on to his juniors over a period of years. It is by no means uncommon also for practitioners who have retired to come back again into practice, driven thereto by economic necessity, or it may be, as Adam said to Eve in *Paradise Lost*, "Short retirement urges sweet return." In such cases the special arrangement made by the Medical Defence Union will come to an end, and the practitioner will not be entitled to any benefits of membership unless and until he pays the ordinary subscription; but even in those cases, when he retires a second time, having already made one "retired" contribution, no other will be exacted and the cover will remain until the end of his days. A more difficult case is that of the doctor who after retirement is called upon from time to time to give emergency treatment by reason of the fact that he is known to have been in medical practice; but it is provided under the scheme

that such cases of emergency are not to be regarded as a resumption of practice, and the "retirement cover" will still hold good. But apart from these there are other cases in which difficulty might arise. It cannot be an uncommon thing for a practitioner after retirement to make or retain acquaintance with the active members of the profession in the place where he lives, and such members may occasionally consult with him over their cases, perhaps assigning an individual case to his care, or even leaving him temporarily in charge of their practice. The question whether such a practitioner is "retired" within the meaning of the minutes of the council of the Medical Defence Union has no doubt been fully considered and provided for. The general principle of protective cover on retirement will be heartily welcomed. It should give peace of mind to the retired practitioner, even though he has no reason to suppose that any question will arise from his previous practice.

LIFE INSURANCE AS THE ACTUARY SEES IT

Two Fellows of the Institute of Actuaries addressed the Assurance Medical Society on November 4th on the way in which the actuary interprets medical reports. Colonel H. J. P. Oakley described it as one of the tasks of the actuary to see that the chief medical officer, if a specialist, was not unduly influenced by his specialist knowledge in assessing risk, and one of the tasks of the chief medical officer to preserve the underwriter from bias. He mentioned one underwriter who in his immediate circle had had two persons die at early ages after suffering from otitis media; thereafter no case of ear disease among the applicants for life assurance received quite fair treatment from him. Colonel Oakley took exception to a remark which, he said, was often made by doctors to actuaries: "You cannot insure him; he may fall down dead at any moment." As a statistical statement of which use was intended to be made that was nonsense. If people might not "die at any moment" life assurance would not be wanted at all. Logically a man was only uninsurable if everyone suffering from his defect must inevitably die within a definite period, say a year. But the cases to which the remark applied did not come into that category, for when the doctor was asked whether it was impossible for the man to live for ten years, the reply was, "Well, he may, but it is not very likely," and further questioning might show that out of one hundred such persons some twenty or twenty-five might die in successive quinquenniums. Very often, therefore, a rough mortality table could be worked out, and something offered to such applicants. What the actuary always wanted to know was, "Will the proposer make 'old bones'?" If not, at what stage of life was the risk likely to be greater than that of a proposer of the same age who was absolutely normal in every respect? Colonel Oakley inquired if it would help medical examiners for life assurance if they were given a normal curve of mortality for different ages and asked to indicate at what part of such curve an extra risk should be placed. A complete diagram would contain not one curve but four—namely, the normal curve, based on the probability of death at every age according to the general table of mortality of assured lives; a curve of extra risk of a nature decreasing with age; a curve of extra risk increasing with age; and a curve of extra risk which remained a constant addition to the normal increase of risk with age, being no greater and no less at the later ages than at the earlier. It appeared to be the general feeling in the discussion that this would make too complicated a pattern for general use, but that the medical examiner might perhaps graphically indicate an extra risk in relation to the normal curve. The other actuary who contributed to the discussion, Mr. W. Palin Elderton, answered several questions relating to the usefulness of a medico-actuarial investigation. It was suggested that there was in assurance offices to-day a vast amount of uncoordinated material which might be worked up and produce useful results in the manner more or less successfully accomplished in the United States. Mr. Elderton, however, was not satisfied that it would be worth while to start a large medico-actuarial investigation without a great deal more preliminary consideration. There was always a danger of wrong conclusions from inadequate sampling. He mentioned that one assurance company made certain investigations into tuberculous family histories, and the surprising result came out that persons both of whose parents had been consumptive were better lives than those who had had only one consumptive parent! Such a result was evidently due to inadequate selection. He thought that it would be dangerous to embark on any inquiry of this kind unless precautions were taken to ensure proper sampling, and unless the insurance offices co-operated in accepting a fairly free exposure to risk while the inquiry was proceeding. Otherwise, except for comparatively small and simple ratings, there would not be a reasonable statistical sample, and there might well be a selection against the companies.

We much regret to announce the death of Lieut.-Colonel Robert Henry Elliot, I.M.S. (ret.), late lecturer in ophthalmology at the London School of Hygiene and Tropical Medicine, who served with great zeal as chairman of the Naval and Military Committee of the British Medical Association from 1917 to 1922. An obituary notice will appear next week.

Sir Charles Sherrington, O.M., has been nominated by the Pope as one of three British men of science to be members of the new Pontifical Academy of Science. This body will consist of seventy-five academicians, and its membership is not restricted to members of the Roman Catholic Church. The inaugural meeting will be held in the Vatican City on February 6th, 1937.

The seventeenth Maudsley Lecture of the Royal Medico-Psychological Association will be delivered by Sir Walter Langdon-Brown at 1, Wimpole Street, W., on Wednesday, November 25th, at 3 p.m. His subject is "The Biology of Social Life." Admission without ticket.

The next session of the General Medical Council will open on Tuesday, November 24th, at 2 o'clock, when the President, Sir Norman Walker, M.D., will take the chair and deliver an address. The Council will sit thereafter from day to day until its business is concluded.

THE ENDOCRINES IN THEORY AND PRACTICE

This article is one of a series on Endocrinology contributed by invitation

ON HYPOPITUITARISM

BY

SIR WALTER LANGDON-BROWN, M.A., M.D., D.Sc., F.R.C.P.

In 1900 Babinsky first described a case of hypopituitarism. It is a matter of historical interest that at that time Cushing and Fröhlich, the two men who subsequently added most to our knowledge of pituitary syndromes, were both working in Sherrington's laboratory at Liverpool. So that apart from Marie's association of acromegaly with the pituitary in 1886 and Oliver and Schäfer's demonstration of an active extract from that gland in 1896, the whole of our knowledge of pituitary physiology and pathology has been gained in the present century.

Fröhlich's Syndrome

Fröhlich returned to Vienna, and in 1901 reported in much greater detail a case of the adiposogenitalis syndrome which has ever since been known by his name. It is perhaps unfortunate that the lesion in this case was a fatal pituitary adenoma, as this led to an unduly sinister prognosis being attached to the syndrome. It took some years for the profession to realize that there is a transitory type for which the name of pre-pubertal obesity would be more appropriate. In other words, after a normal babyhood a child may pass through a state of obesity with delayed puberty and yet ultimately achieve a normal adolescence. Now that it is known that the chromophobe cells in the anterior pituitary are parent cells which have not yet become differentiated, it is justifiable to regard such cases as due to undue persistence of these cells, and the much more serious condition of a chromophobe adenoma should not be diagnosed unless a stereoscopic *x*-ray view shows an enlargement of the sella turcica. This applies also to more persistent cases of hypopituitarism in which the fossa may be seen to be small; the condition is quite compatible with good general health, intelligence, and activity.

With this caveat duly entered the typical appearances in Fröhlich's syndrome may be described. The face is rounded and of good colour. There is a pad of fat over the vertebra prominens. But the principal distribution of the obesity is round the limb girdles, extending down to the elbows and knees; in the lower extremities the fat may hang over the knees, which I have called the "plus fours" distribution. The ankles are usually thick, but the hands and feet are generally quite slender. There are rolls of fat round the back, spreading forwards into and below the breasts. In the male the fat is apt to follow a feminine distribution on the breast and mons, while in the female the breasts may be very pendulous, though sometimes they are poorly developed, most of the fat being submammary. The skin on the back of the upper arms and outer aspect of the shins is reddened. They bruise very easily and develop large cutaneous striae. In males the external genitals are infantile and the testes may be undescended. In women the uterus may be infantile and amenorrhoea is the rule; the breasts, despite their size, contain little glandular tissue. Somnolence is common. The fat boy in *Pickwick*—"Drat that boy, he's asleep again"—is usually quoted as a classical example. There is often a moderate polycythaemia, and sugar tolerance is increased—at all events in the later stages. This might be expected, since the principles secreted by both lobes of the pituitary which are antagonistic to insulin will be deficient. If the basal metabolic rate is considerably lowered there is probably some hypothyroidism as well.

Some of these cases have had an antecedent hyperpituitarism, as shown by premature onset of the catamenia and early union of epiphyses. Then this early activity is followed by exhaustion of the gland. It would not be correct to attribute Fröhlich's syndrome simply to deficiency of the anterior lobe. Its supply of growth hormone may be normal, although the sex hormone is deficient. Though this in itself may well be a factor in the obesity, it is probable that the pituitrin of the posterior lobe is also deficient. Pathological obesity may be due to lesions anywhere in the unit composed of hypothalamus, pituitary stalk, and posterior lobe. Pituitrin plays a part in the transport of fat to the liver, where it is metabolized. Hence any shortage in its supply may well be responsible for the accumulation of fat in the tissue depots. The occasional association of diabetes insipidus with this syndrome also points to some defect in this apparatus.

Dercum's Disease

Adiposis dolorosa, Dercum's disease, is most probably due to an affection of some part of this unit. As a rule it begins insidiously with the appearance of fatty tumours or diffuse deposits of fat. It is much commoner in women, and usually in those who are middle-aged and already stout. The swellings are decidedly painful, and the skin over them may be reddened. There is marked asthenia, and trophic ulcers may develop. Various organic diseases may complicate the condition, and psychic changes are common. From these obvious signs of nervous damage it may be deduced that whatever other part of the unit is involved the hypothalamus certainly is.

Treatment of Pituitary Obesity

It has been positively asserted that any case of obesity can be controlled by diet alone. But I have repeatedly seen patients with hypopituitarism who had starved themselves into a state bordering on inanition without losing weight appreciably. Apparently they retained water in their fatty tissues. Combined with other measures, however, dietetic restrictions may well be useful. For an adult a diet of 1,000 calories containing little carbohydrate (except 5 per cent. vegetables) and less fat may be prescribed, with the recommendation to take small amounts of dextrose when feeling exhausted. This will quickly restore the falling level of blood sugar, to which the sense of exhaustion is due. Starch taking longer to assimilate, more than is absolutely necessary may have to be taken before discomfort is relieved. A day on orange juice alone once every week or fortnight may also help. But children should not be too strictly limited, especially in the matter of carbohydrate, though indulgence in sweets between meals must be curbed.

Thyroid extract cautiously administered is generally helpful. It is wiser to start with not more than 1/10 grain of thyroideum siccum twice daily, gradually increasing the dose, than to run any risk by giving a larger initial dose. For a child of 12 or less the dose should be proportionately smaller. It is positively asserted that pituitary extract given by the mouth is useless, but I

have seen too many instances of greater improvement under the combined administration of pituitary and thyroid extracts than of the latter by itself to attribute them to mere coincidence. In my experience inkretan is the most effective method of giving this combination. Alternatively 2 to 5 grains of anterior lobe extract can be prescribed with each dose of thyroid. A course of pituitrin injections, 1/2 to 1 c.cm. daily for three weeks, is sometimes helpful for the obesity, especially in Dercum's disease. I have also seen good effects from it in other forms of diffuse lipomatosis. When there is delay in the descent of the testes or in the development of puberty a course of the anterior-pituitary-like substance in the form of antuitrin S or pregnyl is indicated.

A chromophobe adenoma may endanger vision, and if this is occurring operation is indicated, for, as W. J. Adie said, we have few opportunities of saving the eyesight and this is one. Deep *x*-ray therapy is useful for other forms of pituitary tumour, but not for this.

Dwarfism and Infantilism

Since the anterior pituitary undoubtedly secretes a growth hormone, it would seem natural to associate dwarfism with some deficiency thereof. But the matter is not altogether simple. A careful distinction must be made between dwarfism and infantilism. Falta takes the stigmata of infantilism to be delay in the development of the gonads and secondary sexual characteristics, in the involution of the lymphatic apparatus, in ossification and the union of the epiphyses, and in the development of the adult proportions. The pelvis is neither masculine nor feminine in type; the psyche is apt to remain at the childish stage. In true dwarfism the adult proportions are correct, though the absolute measurements are reduced, and there are no gonadal defects.

Some authorities maintain, however, that genuinely proportionate dwarfism does not occur. Thus pituitary dwarfism is sometimes characterized by acromicria, or undue smallness of the extremities, in contradistinction to the acromegaly of hyperpituitarism. Experimental evidence is in favour of attributing dwarfism to a pituitary defect, for P. E. Smith found that after removal of the gland from one of two male rats belonging to the same litter this animal three months later was dwarfed and sexually infantile compared with its brother. He then transplanted a pituitary into it each day, and in another three months it had almost caught up its brother in growth and sexual development. That the eosinophil cells form the growth hormone is generally admitted, and P. E. Smith and MacDowell have made the important observation that a defective gene leads to congenital absence of eosinophil cells from the pituitary in hereditarily dwarfed mice.

Simmonds's Disease

But it is more usual for cases of anterior pituitary deficiency to show widespread defects. In 1914 Simmonds of Hamburg reported cases of premature senility in women associated with extensive damage to the pituitary from septic infection. This led to an explanation of the origin of that extraordinary premature senility occurring in childhood which was first described by Jonathan Hutchinson and subsequently more fully by Hastings Gilford under the name of "progeria"—signifying premature old age. The "enfeebled old dotard of five" of the *Bab Ballads* is an example of this condition. Cushing has published a photograph of a girl of 8 whose expression and bodily aspect would have been more appropriate to a woman of over 60.

The classical signs and symptoms of Simmonds's disease are premature ageing, gonadal atrophy, early and complete amenorrhoea, loss of pubic and axillary hair, atrophy of the lower jaw with loss of teeth, lowering of the basal metabolic rate, and a shrinking of the viscera, which sharply contrasts with their enlargement in acromegaly. Anaemia, achylia gastrica, low temperature and blood pressure, and bradycardia may be present. Not all of these will be found in any one case, but the presence of several of them is always suggestive. A number of necropsies have been reported in Germany in which only the eosinophil cells in the pituitary were destroyed. Atrophy of the adrenals was described in some of the juvenile cases before the significance of the pituitary lesion was recognized.

The fact that the growth hormone is now available under the label of antuitrin G makes one hopeful of an improved outlook for the treatment of such cases; it is indicated in simple pituitary dwarfism, together with antuitrin S if there is infantilism as well. It would be rational to employ both in Simmonds's disease together with insulin, adequately covered by dextrose, as for other cachectic diseases.

It is interesting that Bulger and Barr have found alterations in the calcium and magnesium balance in pituitary cachexias, in view of the recognized role of the adrenals in maintaining the sodium balance. As McCance has shown, we appear to be on the threshold of many discoveries concerning the metabolic control of salts and water. It is known that the pituitary plays an important part in this so far as water is concerned, and now it appears likely that further additions must be made to its manifold functions.

Other Hypopituitary Syndromes

Such rare and complex syndromes as the Laurence-Moon-Biedl (mental retardation, obesity, polydactyly, and retinal pigmentation) and the Schüller-Christian (lipoid-granulomatosis, with defects in the bones, exophthalmos, and diabetes insipidus) lie outside our present scope. It is clear that several different conditions have been described under the label of the Lorain type of infantilism. I should be in favour of restricting it to those patients with some evidence of infantilism who are of normal height but who have an abnormally slender skeleton and sometimes develop alopecia.

In future a more scientific classification of hypopituitary types will doubtless be possible when the complex metabolic functions of the gland have been sorted out. At present we can say that lack of the growth hormone may so shorten the life cycle that old age comes on before adult years are reached, or may merely produce a dwarf. If the sex hormone is also deficient, infantilism of some type results. If the hypothalamic post-pituitary apparatus is also involved there will be obesity and perhaps diabetes insipidus. But the permutations and combinations of these syndromes seem almost endless.

According to S. Wdkowski (*Thèse de Paris*, 1936, No. 427) the first case of rat-bite fever in Poland was reported to the Medical Society of Lwow on January 23rd, 1931, by Czyzewski and Bross, and the first cases to be observed in Poland and Lithuania formed the subject of a report by Chodzko, the Polish delegate to the Permanent Committee of the International Office of Public Health at their meeting in 1935. The author, who records two illustrative cases in men aged 24 and 31, maintains that the supposed rarity of rat-bite fever in Poland is due to the failure of medical practitioners to recognize the disease, and that cases are probably more frequent than is supposed. The attention of Polish doctors should therefore be called to its existence, as two or three injections of novarsenobenzol are sufficient to produce a rapid and permanent cure.

Nova et Vetera

HISTORY OF THE AUTONOMIC NERVOUS SYSTEM

Until recently the history of the sympathetic, holosympathetic (Laignel-Lavastine), vegetative, involuntary, organic, or autonomic nervous system remained inadequately explored and described, and has been somewhat obscured by the varying nomenclature employed. J. N. Langley (1851-1925) in Part I (the only one published) of *The Autonomic Nervous System* (1921) dealt with its history in the eighteenth century and after, but did not discuss the earlier views on the subject. Wulf Sachs in *The Vegetative Nervous System: A Clinical Study* (1936) did not carry the story any further back, but Donal Sheehan[1] of Manchester, a travelling fellow of the Rockefeller Foundation for Medical Research, working in Professor John Fulton's physiological laboratory at Yale, has in a monographic article done much to fill up this historical lacuna.

Galen (A.D. 131–201), he points out, described as the sixth pair of cranial nerves the sympathetic and the vagus, or the vago-sympathetic trunk and the rami communicantes of a more modern nomenclature, the superior and inferior cervical ganglia, the ganglia now called coeliac, and the splanchnic nerves; the statement that these ganglia were discovered by Falloppius (1523-62) was a mistake made by Lancisi (1655-1720) and handed down to posterity by the authority of Albrecht von Haller (1708-77), who also erroneously gave the credit of the discovery of the splanchnic nerves to Eustachius (1520–74), the first to recognize in 1552 the adrenals and the rami communicantes. Galen's conception of the vagus and ganglionated trunk of the sympathetic as anatomically and physiologically one cranial nerve, like many of his views, held the field until after the time of Vesalius (1514-64). Thomas Willis (1621–75), who in his *Cerebri Anatome* (1664) reclassified the cranial nerves, the vagus becoming the eighth, gave the name of "the intercostal nerve" to the ganglionated chain of the sympathetic, and expanded Galen's view of sympathy by the hypothesis that it was brought about by a flow of "animal spirits" through the hollow nerves, especially the vagus and the intercostal nerve, which he separated anatomically, though physiologically they were still regarded as forming one system. In 1727 Pourfour du Petit (1664-1741), at one time a surgeon in the French Army, disproved the supposed cerebral origin of the "intercostal nerve," and gave the first accurate account of the syndrome of paralysis of the cervical sympathetic described much later, in the year 1864, by J. F. Horner (1831–86) of Zürich, hence Horner's syndrome; he must not be confused with W. E. Horner (1793–1853) of Philadelphia, whose name is connected with Horner's muscle (the tensor tarsi). Archibald Young[2] regarded Petit's stimulation of the cervical sympathetic and the resulting dilatation of the pupil as the starting point in the story of the surgery of the sympathetic system. J. B. Winslow (1669-1760), the grand-nephew of Niels Stensen (1648–86) and professor of anatomy and surgery in Paris, in 1732 accepted du Petit's conclusions, and anticipated the view of Bichat (1771–1802) in 1801 that the organic or vegetative, as he called it, nervous system was completely independent. Winslow also called the "intercostal nerve" the grand sympathetic, the branches of the vagus he termed the medium sympathetic, and the ganglia the "little brains." Robert Whytt (1714-66), one of the first in Scotland to devote himself to medical research as now understood (Comrie) and perhaps the foremost neurologist of his time (Garrison), in his *Vital and Other Involuntary Motions of Animals* (1751), greatly extended Willis's differentiation of animal movements into voluntary and involuntary; he also independently grasped the conception of reflex action, which had been visualized by Descartes in 1649, by Robert Boyle about the same time, and later by Prochaska in 1784, and by Marshall Hall in 1833. James Johnstone (? 1730–1802), then of Kidderminster, in 1764 by microscopical examination disproved Lancisi's statement, which in 1718 he had attributed to his teacher Morgagni (1682-1771), that the sympathetic ganglia acted as muscular pumps to drive the animal spirits along the hollow nerves; Johnstone argued that they converted voluntary into involuntary movements.

The discovery of the vasomotor nerves by Claude Bernard (1813-78) in 1853 followed the observations of Henle (1809-85) in 1840 and Kölliker (1817-1905) in 1846. W. H. Gaskell (1847–1914) in 1886 and later published his classical papers on the structure, distribution, and function of the involuntary nervous system. His colleague J. N. Langley, after having discovered in 1889 with Lee Dickinson (1862–1904) a new method of investigating the interneural connexions of the autonomic nervous system—the selective paralysing action of nicotine on the ganglion cells of the sympathetic—divided the autonomic nervous system into the sympathetic, the parasympathetic, and the enteric (plexuses of Auerbach and Meissner), and continued to work at the subject with remarkable and unassailable results for the remainder of his life. The title autonomic, in use in a general sense in English since the middle of the seventeenth century, was suggested to Langley in 1889 for the vegetative nervous system by R. C. Jebb (1841-1905), Regius Professor of Greek at Cambridge.

In 1909 Eppinger and Hess, pupils of von Noorden, elaborated the clinical pictures of disorders of the autonomic nervous system and, as the result of pharmacological tests with adrenaline, pilocarpine, and atropine, formulated the conceptions of sympathicotonia and vagotonia (hyperparasympathicotonia); this conception has aroused much criticism, and the sharp distinction between the two states has been largely abandoned in favour of the view that most cases belong to the so-called mixed types, amphotonic or neurotonic.

H. R.

[1] *Arch. Neurol. and Psychiat.*, 1936, xxxv, 1081.

[2] Young, A.: *Contributions to the Medical Sciences in Honor of Dr. Emanuel Libman*, iii, 1253. New York: The International Press, 1932.

ANNALS OF MEDICAL HISTORY

The September number of the *Annals of Medical History*[1] shows some expansion of the changes which this year's transfer of its publishing arrangements has entailed. Much trouble has apparently been taken to make the advertisements unoffensive if not cultivated in type; for example, the page on hypnotic medication in retrospect by the Winthrop Chemical Company is attractively printed; but some medical historians may not welcome the association of Matthew Baillie's portrait with a familiar laxative preparation.

Of the eight original articles the most considerable is that by Dr. A. G. Nicholls of Montreal entitled "The Secret of Secrets, as it Appears in English Literature," which contains many extracts from what is the long version of the more familiar Regimen Sanitatis Salernitanum. Life in the mediaeval universities of Italy and Paris is pleasantly sketched by Professor David Riesman. Dr. Irving I. Edgar brings to a conclusion his essay on the Elizabethan conceptions of the physiology of the circulation, Dr. Lynn Thorndike describes some later mediaeval Latin medical manuscripts at Berne and Prague, and Professor Esmond R. Long of Philadelphia reviews the concepts of cardiac pathology before the time of Morgagni. In a more modern vein are Mr. S. Wood's link with Edward Jenner, Dr. J. K. Hall's description of the Herculean activities during the North and South War of Peter Francisco, of mysterious birth, the hyperpituitary patriot, and Dr. W. Carleton Gibson's sketch of Santiago Ramón y Cajal.

In the account of the Tenth International Congress of the History of Medicine held last year at Madrid it is stated that the next congress will be held in Athens, Sophia, Istanbul, and Zagreb in 1938.

[1] *Annals of Medical History*. New Series, vol. viii, No. 5. September, 1936. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber Inc., Medical Book Department of Harper and Brothers; London: Baillière, Tindall and Cox. (Pp. 385–476; illustrated. Volume of six numbers, £2 10s.; single numbers, 10s. 6d.)

H. B. STALLARD: GLIOMA RETINAE TREATED BY RADON SEEDS

FIG. 1.—Antero-posterior view. Four radon seeds *in situ* from 2 to 6 o'clock, 7-8 mm. apart.

FIG. 2.—Lateral view. Head moved.

A. G. WATKINS: SPONTANEOUS SURGICAL EMPHYSEMA IN CHILDREN

FIG. 1.—Case III, showing bullae in mediastinal tissue and medial aspect of lung.

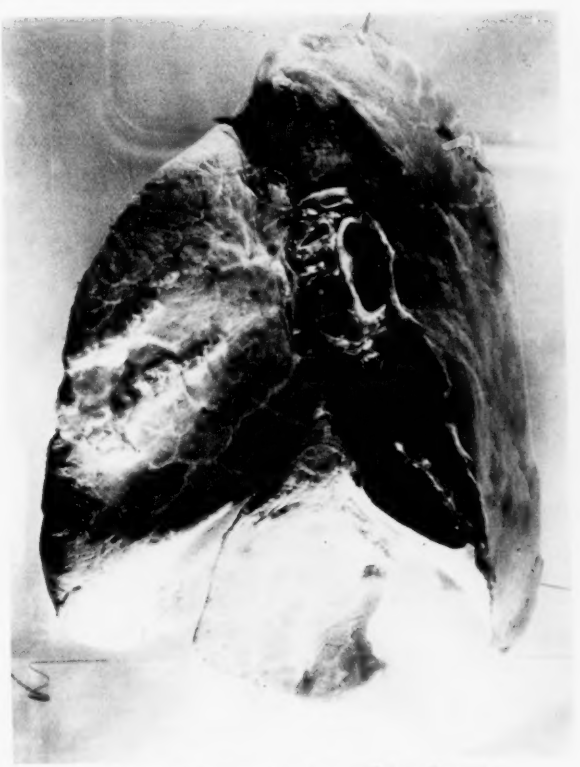


FIG. 2.—Case IV, showing interstitial emphysema.

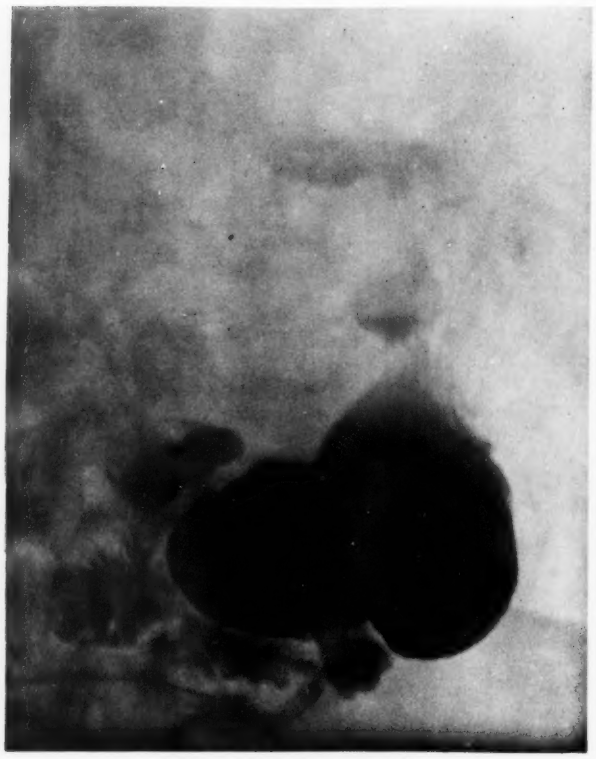


FIG. 1.—Case 8. Before operation.

FIG. 2.—Case 8. Seventeen months after operation.

FIG. 3.—Case 9. Before operation.

FIG. 4.—Case 9. Eleven months after operation.

REGINALD T. PAYNE: DIVERTICULA OF THE STOMACH

FIG. 1.—Case I. Thin-walled diverticulum on greater curvature of stomach. Rest of stomach natural.

FIG. 2.—Case II. Thin-walled diverticulum on greater curvature. Gastric ulcer and healed ulcer also present.

D. H. SANDELL: LATE ULNAR NERVE PARALYSIS

FIG. 1.—Skiagram of right elbow, showing old fracture. Lateral view.

FIG. 2.—Skiagram of same joint. Antero-posterior view. Hand in supination.

F. GLYN-HUGHES AND R. C. WEBSTER: JOINT DISEASE BEGINNING DURING ACTIVE TREATMENT OF SYPHILIS

FIG. 1.—Case I. Skiagram showing Charcot's disease of the spine.

FIG. 3.—Case II. Skiagram showing Charcot's disease of hip-joint with posterior dislocation.

FIG. 2.—Case I. Skiagram showing Charcot's disease of left hip-joint, with pathological fracture.

D. W. McLAREN: SEPARATION OF CONJOINED TWINS

Photograph showing site and degree of the junction.

MEDICAL USES OF RADIUM

REPORT BY MEDICAL RESEARCH COUNCIL

The report of the Medical Research Council upon the medical uses of radium[1] contains, as usual, a great deal of information condensed into a very small space, and includes accounts of experimental as well as of clinical work. As regards the problem of artificial radioactivity it is pointed out that, although much progress has been made in the way of research, the time is not yet ripe for its clinical application, though doubtless it will soon have to be taken into consideration.

Experimental Work

At the Royal Cancer Hospital Dr. W. V. Mayneord is investigating the measurement of radium dosage and the problem of the conversion of "milligram-hours" into the international "*r*" (roentgen) units. The matter is far from being completely settled, but there is a general agreement among several workers that the order of 8 *r* represent *about* the dose of radiation from 1 milligram of radium element screened with 0.55 mm. of platinum at a distance of 1 cm. for one hour.

The effect of so-called "ultra-short-wave" therapy upon rat tumours is under investigation by Dr. H. J. Taylor, who, among other things, has disproved the claim that high-frequency oscillations with a wave-length of about 3.4 metres have a *specific* effect on rat tumours—that is, apart from any question of the heat produced.

In connexion with the work of Dr. Spear and his collaborators the report very justly states: "Researches upon cellular reaction to radiation probably find their highest development in this country at the Strangeways Laboratory, Cambridge, and the contribution this year from workers in that laboratory opens out fresh fields of investigation." It has, for instance, been found that there exist certain optimum intensities of radiation to excite certain particular reactions, and also that the reaction itself depends, among other factors, upon the subsequent state of nutrition of the cells.

Carcinogenic Action of Screened Radium

One of the most interesting accounts of research work is contributed by Dr. Joan Ross of the Royal Free Hospital. This research is based upon a case in which a radium needle, employed in the treatment of carcinoma of the breast, became detached and penetrated the thoracic wall. Efforts to regain it were unavailing, and the patient died three years afterwards from gradual heart failure.[2] At the necropsy the needle was found embedded in the interventricular septum of the heart, and in the liver there was a malignant haemangioma immediately underlying the site where the needle was found. The mode of spread of the growth through the liver tissue made it evident that its point of origin was in that part of the liver nearest to the radium needle.

The possibility that the radium remaining in this position for some years had been the cause of the neoplasm was at once realized, and experimental work was undertaken to ascertain if the long-continued presence of a small quantity of highly screened radium would set up a malignant growth.

Rabbits were selected for this experiment, and a series of radium tubes were prepared each containing 0.1 mg. of radium element, with a wall thickness of 0.55 mm. of platinum and a total length of 1 cm. (These containers represent weak γ ray sources, the amount of hard β rays passing 0.55 mm. platinum being negligible.) It had originally been intended to open the peritoneum and anchor the tubes in the liver, but this was found to be impracticable. After various trials one tube was placed in the thoracic wall on the right side close to the liver in each rabbit. A certain amount of shifting of the tubes occurred, probably soon after insertion. Seven out of nine of the rabbits used developed malignant growths in the immediate neighbourhood of the radium tubes. Six of these new growths appeared at intervals between 97.5 and 135.5 weeks, while the seventh appeared after 167 weeks. Of the two rabbits in which the neoplasms were found one was killed sixty-four weeks after radium insertion as it was suffering from acute enteritis, and the other after 130 weeks on account of acute gastritis and ulceration. In both cases the tubes were firmly embedded in the tissues, and, microscopically, a concentric arrangement of non-cellular and hyaline connective tissue was seen immediately surrounding the radium tube.

The histological features of the malignant tumours are extremely interesting: two were squamous-cell carcinomata and the other five were sarcomata. In the two carcinomata the radium tubes were situated in the deeper layers of the dermis. In the series of five sarcomata the situation of the radium tube and character of the growths are indicated in the accompanying table. One of the squamous-cell carcinomata had produced metastases in lymph glands, pleura, and lungs; the other showed no metastases.

Position of Tube	Nature of Tumour	Metastases
Fascia over cortal cartilage	Spindle-cell sarcoma	General: lymph glands, peritoneum, intestine, kidneys
Under periosteum	Osteogenic sarcoma	General: diaphragm, mesentery, lungs
Subcutaneous connective tissue	Myxosarcoma	None at present (tumour excised; animal alive)
Connective tissue over intercostals	Spindle-cell sarcoma	Glandular: lung
In tumour deep to intercostals, subperitoneal	Spindle cell sarcoma	Glandular: lungs, peritoneum, kidneys

The very interesting point about these experiments is not only that a small amount (0.1 mg.) of highly screened radium acting for a sufficiently long time can produce malignant growths, but that the character of the growths resulting depends upon the nature of the tissues in close proximity to the tube. The carcinogenic action appears to be exerted upon tissues in close, though not immediate, proximity to the tube.

Clinical Radiology

In clinical radiology there have been no special advances in technique to record. During the years 1930–5 a total of 14,077 cases of malignant disease have been treated at the different centres working in collaboration with the Medical Research Council: of these 5,929 (42 per cent.) have been treated by radium alone and 4,087 (29 per cent.) by surgery alone.

During the last year (1935) the relative frequencies of surgical and radiological treatment are as shown in the accompanying table:

	Number Treated	Percentages
By all methods	3,647	100.0
By surgery alone	1,200	32.9
By radium alone	1,369	37.6
By *x* rays alone	489	13.4
By surgery + radium	251	6 9
By surgery + *x* rays	196	5.4
By radium + *x* rays	105	2 9
By surgery + radium + *x* rays ...	37	0.9

Cancer of Breast and Cervix

In cancer of the breast radical operation is still the most usual treatment whenever practicable. At the Birmingham General Hospital large and clinically inoperable breast cancers have been treated with full doses of high-voltage (200,000) *x* rays. In some cases these tumours have thereby been rendered operable eight to ten weeks later. Histological examination of a series of these irradiated breasts has shown that almost invariably

[1] *Medical Uses of Radium.* Summary of Reports from Research Centres for 1935. Medical Research Council, Special Report Series, No. 216. London: H.M. Stationery Office. 1936. (1s. net.)
[2] *Journ. Path. and Bact.*, 1932, xxxv, 899.

there are some islets of cancer cells surrounded by dense fibrous tissue. This very definitely raises the question of the advisability of removing such irradiated breasts and clearing out the axilla even after irradiation has caused an apparent clinical disappearance of the tumour. At the Marie Curie Hospital radical surgical removal is carried out wherever practicable. When radiotherapy is employed preference is given to the low-intensity method of Dr. Coutard. During the past year smaller daily doses have been given over larger fields, with avoidance so far as possible of marked skin and connective tissue reactions.

In carcinoma of the cervix uteri the technique of radiation is the same as given in previous reports, though some slight modifications have been introduced at the Marie Curie Hospital with the object of securing more uniform distribution of radiation and especially of obtaining more effective dosage in the distal parts of the parametria. Emphasis is again laid upon the fact that there is generally far too much delay between consulting the patient's medical attendant and admission to hospital. Undoubtedly this is often the patient's fault, but the practitioner cannot always be exonerated. There is so often the inherent tendency to attempt the relief of symptoms without adequate examination. It is the undoubted duty of every practitioner when confronted with any condition where there is the smallest possibility of doubt either to proceed to thorough examination himself or to send the patient where such an examination can be efficiently carried out.

In conclusion, we may add that year by year these reports are rendering valuable service to all who are interested, either directly or indirectly, in radiological treatment, while the whole series forms an excellent record of progress in this country during recent years.

TUMOURS OF THE PALATE

SEMON LECTURE BY MR. WALTER HOWARTH

The Semon Lecture was delivered at the house of the Royal Society of Medicine on November 5th by Mr. Walter Howarth, who took as his subject "Some Tumours and Ulcers of the Palate and Fauces." The chair was taken by Mr. LIONEL COLLEDGE, president of the Section of Laryngology.

Mr. HOWARTH began with a reference to Semon, who, he said, was associated with his own hospital, St. Thomas's, where he had the distinction of being the first laryngologist ever to be elected to the staff of a general hospital, and where he laid the foundation of his epoch-making work on cancer of the larynx. Semon's collected papers were published under the title *Forschungen und Erfahrungen*, which might be translated "Researches and Experiences," and a great many of these were built permanently into the fabric of laryngology.

He had been interested for a long time in the subject of tumours of the palate, and in the course of twenty-five years he had dealt with a considerable variety of tumours in this situation. Such tumours appeared to have commanded scant attention from surgeons since Stephen Paget published a paper about them fifty years ago. This country had provided more cases for the literature than any other in Europe or America. Palatal tumours were not so uncommon as was often supposed, and it was surprising in what variety they might be encountered. The favoured theory with regard to them was that they occurred in consequence of a fault in development in some early period of embryonic life, when more cells were being produced than were needed for the formation of the part, and a number of these cells remained unused—a very insignificant dominance perhaps, but on account of the embryonic nature of the cells, with very great powers of proliferation. No part of the body suffered more than the palate from an arrest and complication of development.

Mixed Tumours

It would not be possible to discuss in detail every variety of tumour met with, and he intended to deal only with the more interesting, passing over the small papillomata and fibromata that were so commonly seen attached to the surface of the palate, and beginning with the interesting tumour which was known as the mixed parotid, owing to its close resemblance to the curious tumours which occasionally appeared in that gland. These tumours were by far the commonest that occurred in the substance of the palate. Authors had from time to time attempted to collect all the published cases, but many had been omitted even from the most comprehensive review; the number recorded up to the present time was at least 150, and the method of origin of these tumours, in the parotid as well as in the palate—clinically and histologically they presented the same characteristics in the two situations—had given rise to some controversy. Most authors now believed that they arose from faulty development of the glandular tissue and were epithelial in origin. If the epithelial origin of these mixed tumours was accepted they might possibly be called adenomata, but in view of the special features it was perhaps well to retain the term "mixed tumours" on account of the variety of histological appearances that were seen.

These tumours were very slow-growing, and it was not uncommon for them to be present for many years before they were discovered. They caused no pain, and attention was often drawn to them only on account of some mechanical discomfort. They were usually encapsulated, and generally regarded as comparatively benign. This, however, was not always the case, especially if the capsule was ruptured through trauma. In the large majority of cases the surgical treatment was simple, as they shelled out readily, and if the entire capsule was removed cure was usually effected. In operations inside the mouth he always preferred the diathermic needle to the scalpel, and he had for many years advocated its use in dealing with comparatively simple tumours such as these. The tumours were almost invariably small, probably owing to the fact that some local discomfort in mastication or in wearing a denture led to comparatively early recognition. They might grow to large size. Although he preferred diathermy in dealing with these tumours, he knew that may surgeons advocated the use of radium. The results obtained at the Mayo Clinic and elsewhere with radium did not seem, however, entirely satisfactory.

Vascular and Fatty Tumours

Haemangioma and haemangio-fibroma were rare tumours in the palate, but it was advisable that their existence should be borne in mind. In these vascular tumours diathermy was valuable. He illustrated one case of haemangio-fibroma which he saw in 1913 after it had been incised by a local practitioner, and the patient was almost moribund from haemorrhage. A sarcomatous condition was suspected. The operation for removal was a severe one—it was before the days of electro-surgery—and necessitated an external approach as well as one through the palate. There was no evidence of malignancy, however, and the growth was found to be haemangio-fibroma. The patient was still alive and well after twenty-three years.

Fatty tumours in the palate were extremely rare; he himself had seen only one. His case resembled one reported by Mr. Tilley in 1919 in that it pushed the tonsil downwards. In addition to much palatal swelling there was in his own case a swelling in the submucosal region. When he cut down on to it it was found continuous through the palatal tumour. The rapid taking of a section and staining of a piece in the theatre showed it to be a fibrolipoma. He decided to proceed with the removal of the growth by a Kocher incision, and was soon able to shell out the whole of it without making any wound in the palate. The tumour was of considerable size, and seemed to be encapsulated.

Adenoma was represented in his series by only one case. In this instance the tumour was embedded almost entirely

in the soft palate. There was apparently no infiltration, and the growth, which was encapsulated, was easily removed with the diathermy knife seventeen years ago. A more unusual tumour was adenocarcinoma. One case in his series was a lady, aged 74, who came to him in 1929 with a history of a tumour which she had noticed two months previously. It was firmly fixed in the hard and soft palates, and the mucosa over, which was intact, showed numerous dilated vessels. He thought it was probably an adenoma, but when he removed it with the diathermic knife and had it examined it presented the structure of an adenocarcinoma arising from the mucous glands. The patient remained well for four years, and then noticed a further lump in the side of the palate. He removed this, along with certain portions of the palate, with the diathermic knife, and there had not been a further recurrence. The lady was now 82.

Osteomata were occasionally described as occurring in the palate. Many years ago he had under his care a small boy with a hard bony swelling under the mucosa of the hard palate in the mid-line. It was quite smooth, and was said to have been present for some years. He exhibited the case, and he thought it was proved conclusively that it was not really neoplastic, but an example of the condition known as torus palatinus. Since then he had seen one or two cases of supposed osteomata which turned out to be, not pathological, but an anatomical variation. Torus palatinus generally presented a smooth swelling in the mid-line.

Malignant Disease and its Treatment

Mr. Howarth went on to show a few drawings of typical cases of epithelioma of the palate and fauces. One showed a bilateral extension of growth that began in the tonsil. Even though tumours in this region might present similar clinical appearances it was seldom if ever possible to estimate the chances of a successful outcome of treatment. He mentioned one case of a woman of 50, who survived fifteen years after diathermic incision and block resection of the neck. It must not be assumed, however, that all cases were as favourable as the one or two successes which he quoted. A great many of these patients died within a year or so.

He proceeded to describe in detail the operation he commonly employed: an excision of the growth and surrounding tissues in one piece with the diathermy knife. He had used the method since 1916, but he did not claim priority in the matter. He thought there were many advantages to be gained from diathermic incision. The objection made by many surgeons that it was not possible with this method to see what one was doing or to define anatomical landmarks was not in the least true. In fact, the absence of bleeding gave an absolutely clear field. The risk of distributing cancer cells in the wound was far less than the operation with scalpel and forceps, even supposing this could be carried out.

During the years 1916–31 he had dealt with sixty-one cases of malignant disease of the palate and fauces. Of these, fifteen were alive more than five years after operation. Of the remaining cases, twenty-two (36 per cent.) died within the first year, while the remaining twenty-four lived for periods varying from one to four years. Of the fifteen patients alive after five years one had survived fifteen years and the others between five and ten years. Many of the cases he had dealt with were regarded as hopelessly inoperable in the ordinary way. It was probably true to say that gland involvement affected prognosis adversely in more than 50 per cent. of cases. Facts and statistics could be made to serve conflicting uses, and it was not his intention to obscure the issue by comparison with other methods of treatment, but diathermic excision had a definite place in the surgery of malignant disease in this region. Various forms of radiation had been employed during the last decade with increasing success, and with improved technique in application some striking results had been obtained in faucial neoplasm. In this country the local application of radium and the five-gram radium unit externally had been in use for such a comparatively short time that the ultimate value could not be estimated as yet. It seemed that a great number of the striking successes recorded in other countries had been obtained in the particular form of epidermoid carcinoma described under the name of lympho-epithelioma.

Ulcerations

Finally, Mr. Howarth spoke of some forms of ulceration in this region. He passed over the massive infiltration and ulceration usually associated with tertiary syphilis and Vincent's angina, and considered briefly those cases in which a shallow superficial ulceration was the predominant feature, as it was these cases which so often gave rise to great difficulty in diagnosis. They had all been brought up to keep the possibility of cancer, syphilis, and tubercle in the forefront of their minds. He had already spoken of the form of carcinoma in which diffuse ulceration was the main feature. Syphilis in the palate and fauces manifested itself in the same protean way as was the case elsewhere, and the lesions might resemble—though never quite exactly—those caused by other agents. Tuberculous fauces were almost invariably seen in patients who were in the last stages of pulmonary tuberculosis. It was an agonizingly painful condition, and rapidly progressive. Occasionally cases were encountered in which there was a local manifestation with no obvious lung disease.

Lupus provided many cases of shallow ulceration in the fauces, and usually responded to treatment satisfactorily, but there were intermediate forms which, for want of a better name, might be called lupoid, and these often resisted treatment and showed a tendency to relapse. He remarked on the chronicity and resistance to treatment of streptococcal infections. Another condition to be considered was that to which he had given the name of precancerous epitheliomatosis; he believed this to be a definite entity, and he brought forward three cases. The true significance of the condition might not be appreciated until the unusual but very definite histological picture was studied. The main clinical characteristic was the chronicity of the process, and it was not uncommon for fifteen or twenty years to elapse before definite malignant changes supervened.

The vote of thanks to Mr. Howarth was proposed by Mr. HERBERT TILLEY and seconded by Mr. V. E. NEGUS.

POPULATION INVESTIGATION COMMITTEE

We are informed that an investigation committee has been set up to examine the population problem and the circumstances which have led to it. It is held that before useful suggestions can be made to avert a serious decline in numbers there must be a much fuller investigation of the position than has yet been undertaken. The composition of the committee is as follows:

Professor A. M. Carr-Saunders, M.A. (*chairman*); Eardley Holland, M.D., F.R.C.S., F.R.C.P. (representing the British College of Obstetricians and Gynaecologists); L. S. Penrose, M.D. (representing the Medical Research Council); H. D. Henderson, M.A. (representing the Royal Economic Society); Stella Churchill, M.R.C.S., D.P.H. (representing the Society of Medical Officers of Health); Sir Charles Close, F.R.S. (representing the British Population Society); Lord Horder, M.D., F.R.C.P.; Mrs. E. M. Hubback, M.A., and Julian Huxley, M.A., D.Sc. (representing the Eugenics Society); Colin Clark, M.A.; Professor L. Hogben, F.R.S.; Dr. R. R. Kuczynski; E. M. H. Lloyd, B.A.; T. H. Marshall, M.A.; Lady (Rhys) Williams; Professor James Young, M.D., F.R.C.S.Ed.

Dr. C. P. Blacker, F.R.C.P., will act as honorary secretary, and the committee has obtained the services of Mr. D. V. Glass, B.Sc., as full-time research secretary. Inquiries may be sent to the Secretary, Population Investigation Committee, 69, Eccleston Square, S.W.1.

Reports of Societies

EARLY LARYNGEAL TUBERCULOSIS

At the meeting of the Section of Laryngology of the Royal Society of Medicine on November 6th, with Mr. LIONEL COLLEDGE in the chair, a discussion was held on the problem of early laryngeal tuberculosis.

Dr. N. RH. BLEGVAD of Copenhagen based his remarks, in opening the discussion, on his experiences at the throat clinic in the Oresundshospital in Copenhagen and in the Boserup Sanatorium, of which he had had charge for the last twenty years, both belonging to the municipality. There were 500 beds in the hospital and 175 beds in the sanatorium for patients with phthisis. From 1916 to 1934 1,773 patients with typical laryngeal tuberculosis had been treated. Of these, 404 patients could not be traced. Of the remainder, 399 (29.1 per cent.) were clinically cured, 139 (10.2 per cent.) were improved, and 831 (60.7 per cent.) had remained unchanged. Of the total number, 1,012 (64 per cent.) were now dead and 297 (36 per cent.) still living. The treatment consisted principally of general light baths, either arc light as used at the Finsen Institute, or, of later years, mercury. Of 179 patients who had had what he called the quartz light baths, sixty-six (37 per cent.) were cured, thirty-seven (21 per cent.) were improved, and seventy-six (42 per cent.) not improved. Combined with this treatment, however, were various local surgical measures, using the knife or diathermy needle. Laryngeal tuberculosis at once manifested itself as tuberculosis; only rarely did it appear as laryngitis. The following six affections must cause suspicion of tuberculosis, especially in patients suffering from phthisis: (1) isolated redness of one of the vocal cords; (2) prolapse of the ventricle of Morgagni (an almost certain sign); (3) swelling and redness of the posterior ends of the vocal cords (processus vocalis); (4) swelling of the lower surface of the vocal cords; (5) infiltration of the interarytenoid region; (6) a little red cushion below the commissure on the anterior wall of the trachea. The examination of the interarytenoid region with the posterior-wall mirror of the Dutchman ter Kuile was recommended. This instrument was invented many years ago, but he had seen no mention of it in textbooks. It consisted of a little mirror placed on a probe and put at an angle of 45 degrees to the axis.

Dr. Blegvad showed a scheme indicating the incidence and appearance of laryngeal affections in four general conditions (see table).

Incidence and Appearance

	Tuberculosis	Lupus	Syphilis	Carcinoma
Sex	Men and women equally	Women	Men	Men
Age	20 to 40	15 to 25	30 to 50	40 to 50
Development ...	Rather slow	Very slow	Rapid	Slow
Hoarseness	Rather considerable	Slight or none	Some	Considerable
Dysphagia	Considerable	None	None or slight	None or slight
Localization ...	The interarytenoid and arytenoid regions, posterior surface of epiglottis, aryepiglottic fold, ventricular bands, vocal cord	Posterior surface of epiglottis, aryepiglottic folds	Anterior surface of margin of epiglottis	Vocal cords
Swelling	Pale, oedematous, poorly demarcated in the beginning, unilateral or bilateral infiltration surrounding papule	Red, rather well demarcated, multiple tuberous infiltrations	Red, fairly distinctly demarcated solitary tumour, surroundings strongly injected	Strongly injected, not sharply demarcated, broad base, double infiltrating tumour, with "angry" surroundings
Ulceration	Multiple, often confluent, small irregular superficial ulcerations with swollen, eroded edges	Superficial, pale, not sharply demarcated multiple ulcerations formed by breakdown of miliary infiltrations	Large solitary deep ulceration, with swollen, undermined edges	Solitary large, deep, irregular type of tumour; floor gangrenous
Mobility of vocal cords	Quite good	Good	Quite good	Impaired
Glands	Not large	None	Not large	Rather large in advanced stage

Early Stages

Dr. L. S. T. BURRELL said that recurrent hoarseness was not an uncommon complaint in early pulmonary tuberculosis, and should always lead to a careful examination of the lungs. It was often due to a simple laryngitis, even in tuberculous patients. True tuberculous laryngitis was not easy to recognize in the early stages, but should be suspected if, instead of a general laryngitis, there was a local lesion, especially if it was situated posteriorly. Such a complication used to be regarded as a death warrant for the patient, but it was now recognized that even extensive ulceration of the larynx might heal. If, however, tuberculous laryngitis got steadily worse in spite of treatment it was almost always associated with spread of disease in the lung, and rendered the prognosis very grave. In his opinion the occurrence of tuberculous laryngitis complicating a pulmonary lesion was a strong indication for artificial pneumothorax, unless the condition of the lungs definitely contraindicated this treatment. As with tuberculosis in other parts of the body, rest was very important, and so the patient should not speak at all, or if he must, it should be in whispers. Dr. Burrell also commented upon the frequency with which a patient was seen because of haemoptysis in whom a diagnosis of some laryngeal condition had been previously made. In his experience blood that was coughed up always came from the lungs, never from the larynx. In tuberculous laryngitis he had found smoking most injurious. Many cases of hoarseness and doubtful early laryngitis healed up when the patient was strong-minded enough to stop smoking. When laryngeal symptoms were associated with pulmonary tuberculosis the patient should be urged to give up this indulgence.

Analyses of Cases

Sir STCLAIR THOMSON said that the proximate cause was, of course, the tubercle bacillus, and it was certainly difficult to explain why it was so often impossible to find the organism in the diseased tissues of the larynx. How were the cases without sputum and bacilli to be explained? A patient might bring up copious sputum laden with bacilli for years without contaminating the larynx, and in another case the condition in the larynx might develop before there was any evidence of bacilli. Was it a problem of variety of type, the three chief types being lupus, lupoid, and the clinically typical tuberculous lesion? Two larynges might present almost identical clinical appearances, but the skilled eye could see in one and not in the other the signal of almost certain death. The problem of treatment had for the present been very much simplified, owing to sanatorium provision. It came down to a question of prompt sanatorium treatment, voice rest, and the galvano-cautery. The modern methods of collapse therapy, as well as the general treatment of the patient, were also important. He agreed with the giving up of tobacco. Even the few cases which might recover though the tobacco habit persisted would clear up more speedily if tobacco were put aside. The speaker, with

the aid of lantern slides, described his technique of laryngeal inspection and the significance of the various appearances. Of some 2,000 patients with pulmonary tuberculosis whom he saw in ten years, and who were reported on ten years later, the number living who had had a sound larynx was just double the number whose larynx had been diseased. In fact, during that period two out of every three patients with laryngeal tuberculosis were dead, while the proportion was reversed in the case of those with a sound larynx. Tuberculosis of the larynx was a very serious disease. It was sad to think that of some 500 cases seen in his service during ten years 70 per cent. were dead within three years of leaving the sanatorium. His record of 25 per cent. lasting cures was the same average as Mr. Howarth, the Semon lecturer, had mentioned for his results in cancer of the pharynx, so that it was just as serious to have well-marked tuberculosis in the larynx as to have tumour in the pharynx. The chief hope was still in early diagnosis. In differentiating the disease from cancer there was less harm in regarding a lesion for a time as tuberculous than in a precipitate decision that it was carcinoma. Advances had been chiefly due to voice rest, use of the galvano-cautery in suitable cases, and the evolution of collapse therapy.

Mr. F. C. ORMEROD gave an analysis from the Brompton Hospital of all the cases of early tuberculosis of the larynx in 1934. These were sixty-five in number. The early cases were those with infiltration with or without oedema. Of the cases which fell within this group at Brompton, twelve had phthisis in both lungs and fifty-three in one lung; four had cavities in both lungs and twenty-eight had cavities in one lung; fifty had tubercle in the sputum, four had tubercle-free sputum, and in eleven others this condition was not recorded; nine had infected tonsils and six had nasal obstruction. It was obvious that a slight condition in the larynx did not mean a slight condition in the chest, but the progress of the laryngeal disease did tend to run parallel with the chest condition. Out of the sixty-five cases the early lesion was in the vocal cord in forty-one, the ventricular bands were affected in nine cases, the arytenoid processes were infiltrated in two cases, and the interarytenoid space in nine.

Treatment

Mr. J. D. MCLAGGAN added some remarks on treatment. It was unlikely that local treatment of laryngeal lesions would be of benefit so long as the infected sputum persisted. The first essential of treatment of tuberculous lesions in any part of the body was to put the part at rest, and it was unlikely that laryngeal tuberculosis would benefit until the cough had been controlled. In the majority of cases, as the lung condition responded to treatment so did the laryngeal condition, but it was not only in the beginning that the physician's part was an important one: he must supervise the whole course. Local treatment of almost any kind was fatiguing, and where fatigue was noticed the physician must step in and forbid local treatment. The galvano-cautery could be extremely harmful in the presence of any active focus in the lung. His rule was, if in doubt about cauterization not to cauterize. Local treatment had three main aims: to reduce the discomfort of the lesion, to attempt cure, and to relieve pain. In attempting cure rest of the voice was the first essential. The imposition of complete silence was an extremely severe tax on the patient. The patient's co-operation must be secured by an intelligent explanation of his position. The second method of attempting a cure was galvano-cauterization. This was a valuable aid, but the more cases he cauterized the more careful he became in their selection, taking account not only of the laryngeal lesion but of the general condition of the patient. He disliked the use of the cautery if the laryngeal lesion was active. The third method was local applications. He had tried many, but never had sufficient faith in them to omit other treatment, such as routine silence. He was quite unconvinced that the healing of the lesion had been hastened by the use of any local application to the larynx. Sunlight treatment was difficult to apply efficiently. On the question of treatment to relieve pain he had nothing fresh to say. The real stand-by was injection of the interlaryngeal nerve. A recent description of iodide ionization seemed promising.

Dr. JOBSON HORNE referred to an investigation which he had carried out many years ago when he examined the larynx post mortem in a large series of tuberculous subjects. He found that, although there had been no trouble with the larynx, there was in several cases evidence of the disease in the interarytenoid region. An important thing he found was a definite myositis of the interarytenoid muscle. The earliest evidence of the condition was not hoarseness, but weakness of the voice, the patient experiencing not only dysphonia but aphonia at times. This aphonia was explained by finding in many cases a triangle opening when the cords were adducted in the posterior third. That was often the starting-point of early laryngeal tuberculosis. With regard to prolapse of the ventricle he thought that that phrase ought always to be in inverted commas. The question had been raised whether the larynx bled when there was haemoptysis. He agreed that it did not; one might see the wall of the trachea splashed with blood, but with no bleeding points. As to why laryngeal tuberculosis was more often curable than formerly, his explanation was that tuberculous laryngeal disease always went *pari passu* with the disease in the lungs, and the progress made in sanatorium treatment of the pulmonary condition accounted for the lessened incidence of the laryngeal.

Tuberculosis and Cancer

Before this discussion Dr. A. HAUTANT of Paris discussed the similarities between certain anomalous forms of laryngeal tuberculosis and cancer of the larynx. Laryngeal tuberculosis, he said, was recognized by the superficial localization of its lesions, the positive sputum, and the concurrence of the pulmonary condition. But sometimes each of these characteristics might lead to an erroneous diagnosis as between the two conditions, an epithelioma at times taking on the aspects of a tuberculous lesion, and a biopsy in different locations was desirable. By means of diagrams, radiographs, and microscopical sections Dr. Hautant indicated the various appearances which might give rise to confusion. Similarly subglottic verrucous tuberculosis and ventricular tuberculous tumour closely simulated carcinoma of the larynx. In spite of the evidence of the laryngeal lesions a pulmonary examination should always be made. The *x*-ray picture of the larynx, if it revealed subglottic extension and cartilage lesions, was in favour of neoplasm. Provocative *x*-ray therapy was dangerous, and should be undertaken only with very great caution.

THE MANAGEMENT OF MALIGNANT DISEASE

At the first meeting of the session of the Section of Surgery of the Royal Society of Medicine on November 4th Professor G. GREY TURNER delivered an address from the chair, taking as his subject "The Debatable Land in the Management of Malignant Disease."

It was debatable, he said, whether cancer was on the increase, but it would be universally allowed that there was no evidence of any reduction, either in its incidence or in its mortality. In this connexion the attitude of the laity was easily understood. It might be that in certain fields the published figures for treatment showed a large proportion of successes, but the public judged results only by the average, and naturally tended to look on the black side of the picture. In the ranks of surgery there was no excuse for pessimism. The profession must always regard the best results in the hands of the most expert as the goal to which all its efforts were directed. As to causation, it was very difficult to piece together the story of cancer. A good deal of what was written on the subject might with advantage be subjected to the cool judgement of some legal mind. He feared that, in spite of many suggestions to the contrary, the vast amount of experimental work which had been done could not as

yet be translated into terms either of prophylaxis or of therapeutic management. Even the oldest explanation, that of chronic irritation, often seemed to fall to the ground. In considering these problems it seemed to him that the time factor was frequently neglected. Some particular agent might exert its action for many years before the specific effect was shown. An illustration of this was afforded by tar workers; there were exceptions, but generally it was only among those who had worked in tar for many years that malignant conditions appeared. It was also highly probable that any specific element might only act if conditions of body resistance were favourable. There were many patients in whom malignant disease did not develop, in spite of what appeared to be favourable features, and others in whom it seemed that the tissues were determined to commit suicide.

Cancer Causation

One factor which was overlooked in cancer causation was the ever-increasing unrest, both mental and physical, which characterized the community of to-day. Most observers seemed to be agreed that those who lived the least disturbed and most vegetative sort of existence, and maintained a calm and cheerful outlook, were least likely to suffer from cancer. It was also stated that cancer took a heavier toll of the industrial community than of any other class. There could be no doubt that those in a humbler walk of life were less able to protect themselves from the minor horrors of civilization than those in another sphere, and although hours were shorter than formerly in industrial work the speed and intensity of effort were greatly enhanced. However the problem was viewed it was true to say that at the moment the cause of cancer was not known, and it was much more honest to admit this than to attempt to regulate the lives of patients according to some pet theory unsupported by facts.

With regard to precancerous conditions, there were many debatable points. It was usually assumed that damaged organs were more liable to cancer than healthy ones. During the latter period of his work in Newcastle he saw a great many cases of cancer of the mouth, but in the majority there was no evidence of leucoplakia. Several of the cases occurred in women, and often in those whose rules of hygiene were entirely above suspicion. It might be that leucoplakia was a precursor of cancer, but his experience of conditions in the mouth made it absolutely clear that the disease could occur as frequently and as readily in the absence of that condition. To-day a great many people spoke of oral sepsis as an undoubted precursor of cancer, but there was never a time when more attention was paid to the mouth than at present, and yet malignant disease of the mouth and the oesophagus was as common as ever. It was suggested that gastritis was a precursor of cancer in the stomach, but unless such gastritis could occur without causing symptoms it was not in accordance with his own clinical experience. The fact that it was often the big, strong, healthy-looking people who fell victims to cancer almost suggested that this disease was connected with a full life. What was the match that lit the fire? There seemed no reason to assume, so far as he could gather from his experience, that there need be any preceding pathological condition. It was quite clear at least that in a great many instances there was no recognizable evidence of any preceding departure from normality on the part of those attacked.

Diagnosis of Cancer

The onset of malignant disease undoubtedly varied. It must not be taken for granted that it always slowly progressed from its inception to maturity. He had been much struck by the statements of highly intelligent people who had assured him that the growth had sprung up in a short space of time, like an outburst, and having reached a certain point its progress slowed down. Even the big growths that broke down and went on to ulceration were not necessarily nor usually so malignant in their behaviour as those in which early infection of the lymphatics occurred. The invasion of glands might be a sign of widespread involvement. He had known many cases in which the growth had not appeared in the glands until ten, fifteen, or twenty years after successful treatment of the primary growth.

In connexion with the diagnosis of malignant disease many debatable points cropped up. It was very surprising to consider in these days what a long period frequently elapsed between the first signs of malignant disease and the first occasion on which the patient sought treatment. The explanation of that might often be that the patient feared the verdict of the doctor, and this position could only be altered by the right sort of propaganda. But he was distressed about the period that elapsed between the first consultation over a doubtful condition and the definite start of treatment for malignant disease. He had repeatedly seen malignant disease go on to an inoperable state simply because the first practitioner who saw the case thought that it was an inflammatory condition and treated it as such. In abdominal conditions they were all aware of many instances in which malignant disease was overlooked. He had been lately astounded at some cases in which the symptoms were so slight and evanescent that if one had not been impressed with the importance of the subject the diagnosis might not have been made for a considerable time. Diagnosis of the extent of the malignancy was quite as important as the diagnosis that malignant disease was present. In the diagnosis of malignant disease it was not sufficient to make a careful clinical preoperative examination. The diagnosis was important from the pathological point of view. Much had been said about the possible harm of a biopsy, but he was inclined to think that the harm from a biopsy was likely to be less than if the tumour was handled and palpated and squeezed with the patient under the anaesthetic on the operation table.

Treatment, Remedial and Palliative

On the subject of treatment, he had recently been much impressed by the experience of the treatment of some patients suffering from malignant disease in various situations. He had in mind patients with large obvious malignant lumps in the neck and axilla and with secondary deposits in other parts of the body, the primary disease having been treated by deep *x*-ray therapy. What had impressed him was the way in which the secondary tumours, not exposed to the *x*-ray therapy at all, showed for a time a marked improvement.

It was necessary to insist, however, on the extreme importance of the place that operative surgery still took in the treatment of malignant disease in most situations. He was fully conscious of the great value of radium and its superiority under certain conditions, but in most parts of the body the treatment of cancer was a question of the treatment of the area of lymphatic drainage, and his belief, founded on very considerable experience, was that for the treatment of the glands surgery at the moment was better, and was attended by fewer failures, than treatment by any other means. He had been greatly distressed by the number of patients seen during the last few years in whom the primary focus had been effectually treated by radium, while the region of the lymphatic glands had been either not thoroughly or not properly treated, and their involvement subsequently had gone too far for effective surgical intervention, and the patient had died. This had been particularly the case in malignant disease of the lip, of the tongue, and of the vulva. There was a growing uneasiness in certain sections of the profession as to the possibility that radium sometimes enhanced malignancy and caused unexpected dissemination. In dealing with cancer nothing could be worse than meddlesome interference—"people using a spot of *x* rays or a dash of radium, combined perhaps with a little touch of surgery."

Professor Grey Turner showed a large number of illustrations of cases of malignant growth which had been treated successfully by operation, the patients remaining

well for many years. In operations for breast cancer, taking the ten-year period, out of 108 unselected cases fourteen, or 12.96 per cent., were known to be alive and free from recurrence. The tale of operations on the stomach was not so encouraging; nevertheless, operation had been in many cases a palliative measure of extraordinary value. There were, in fact, a great many encouragements encountered in the surgery of cancer, as his own lantern slides bore witness, and it was wonderful how the perseverance first of the patient and then of the surgeon was often rewarded.

The best chance of dealing with malignant disease lay in a well-executed excision of the growth together with a wide area of healthy tissue on the path of probable cancer invasion while the disease was still local. Every case which did not show unequivocal evidence of dissemination should have the chance which only an operation offered. As for patients who were beyond any effective relief by surgical intervention, it was a great privilege to look after them to the very end. It was always worth while to do something for them, even if the relief was only to be temporary, and he had no hesitation in saying that palliative operations should be carried out rather than that they should think in terms of euthanasia.

MINOR RECTAL CONDITIONS

At a meeting of the London Association of Medical Women's Federation held on October 27th Miss E. C. LEWIS, F.R.C.S., gave her presidential address on the treatment of minor lesions of the rectum.

Miss Lewis said that she had chosen as her subject minor lesions of the rectum because they sometimes presented difficulties to the practitioner, not so much in diagnosis as in the selection of the type of treatment which was most likely to yield a good result in any particular case. She began with haemorrhoids—not only the most common of the diseases of the rectum, but often the primary cause of other disturbances. She indicated the three classical symptoms of uncomplicated piles—pain, bleeding on defaecation, and prolapse—and the usual division into external and internal haemorrhoids of first, second, or third degree. Examination by inspection, digital palpation, and a proctoscope was required, and the possibility of a carcinoma should not be ignored. Treatment was prophylactic, palliative, or surgical. The patient with a tendency to haemorrhoids should avoid constipation, straining at stool, and overmuch standing. Regular laxatives were not injurious, but salts should be avoided, as they produced a watery motion with a rather explosive action followed by straining. Palliative treatment consisted in the use of very soft lavatory paper, alternate hot and cold sponging, ointments (either stimulating or sedative), and medicated pessaries.

Of the two types of surgical treatment—injections and operations—the first should always be employed if possible, but it was not applicable in much more than 50 per cent. of the cases. The medium most generally used was a 5 per cent. solution of carbolic acid in almond oil with 2 grains of menthol to the ounce. Miss Lewis discussed the method of injection, which could be repeated every week for six weeks, with a shorter course six months later if required. If the patient was not relieved she proceeded with caution to operation. It was necessary to guard against doing too much to this region, for a fibrous stricture could develop very rapidly. The cases for operative treatment included those of intero-external piles, those with a great deal of thickening, and those with fibrous tags or an indurated fissure which would not heal. The method recommended was transfixion and ligature. Miss Lewis's practice was to leave a 1/2-grain morphine suppository in the rectum and run in some sterile vaseline; she did not put a tube into the rectum, as the discomfort caused more than offset any advantage. The patient started hot baths the next day, and kept the bowels confined for at least four days, after which an aperient was given and a small warm olive oil enema. Before the patient went home a finger should be passed and the anus gently dilated to prevent any risk of stricture formation. In piles complicated by inflammation no surgical treatment should be undertaken until the infection had entirely subsided. The patient should be confined to bed and an attempt made, but not persisted in if unsuccessful, to reduce the piles, perhaps after an injection of a local anaesthetic into the sphincter region. Hot sitz baths might help, and hot fomentations or antiphlogistine should be applied locally. A thrombosed external pile could be incised after an injection of novocain, the clot turned out, and redundant skin excised. External piles could be removed under local anaesthesia.

Fissure, Prolapse, and Fistula

For fissure palliative treatment with ointments and bathing rarely sufficed. To obtain relaxation of the spasmodic contraction of the sphincter, which prevented the fissure from draining and rendered it inaccessible, an injection of A.B.A. (anaesthesin 3 per cent., benzyl alcohol 5 per cent., and ether 10 per cent., in olive oil) should be given in a large-bore needle. The A.B.A. injection was given half an inch behind, at the sides, and deep to the fissure. It should give relief from pain for about a week, during which time the fissure was dressed daily and usually healed. If it did not heal at its base, or if there was a marked sentinel tag, it was best to excise the whole fissure, together with a strip of skin running outwards from it, and to allow the gap to heal up without suture. The anal sphincter should be well stretched at the same time, and the patient should remain in bed for ten to fourteen days.

Prolapse of the rectum associated with severe haemorrhoids would disappear with them. The treatment of true simple prolapse depended on the condition of the sphincter. If this was divided the treatment was repair of the sphincter, probably combined with a plastic operation to create some support for the lower end of the rectum. Sundry operations had been devised for the cure of prolapse where the sphincter was intact. Miss Lewis gave an account of the injection methods of Gabriel and Swinford Edwards, which she had used with benefit in a few cases. This treatment was a combination of intrarectal and perirectal injections carried out at one sitting. This treatment was not ambulatory: the patient remained in bed for about a fortnight. In the after-care the bowels were kept confined as after an operation for piles, but the patient should begin at once on a course of voluntary contractions of the anal and perirectal muscles—namely, twelve contractions three times a day. In cases of prolapse in children, if training, mild aperients, and general tonic treatment did not suffice, a small operation could be performed, consisting of making three or four linear stripes about a quarter of an inch wide with a thermocautery in the mucosa above the anal canal. The object was to fix the mucosa to the underlying tissues by a scar. The child should be kept in bed for two or three weeks and not permitted to strain.

A fistula, although much less distressing to the patient than a fissure, was more difficult to treat. It was essential to lay open the whole of the track and to excise as much of the fibrous tissue as possible. If the track was a branching one this might entail quite an extensive operation, as failure would result from leaving a portion of the track unopened; this was because of the indurated walls, which would not fall together and allow the channel to close up. In the after-treatment it was of the first importance to keep the cavity open and allow it to granulate up from the bottom; otherwise the fistula would re-form. If the internal orifice was situated above the level of the sphincter the latter might have to be divided, but, even if there were multiple openings, this muscle must never be cut at more than one point if subsequent incontinence was to be avoided. In view of this danger it might even be wisest to perform a two-stage operation, exposing the sphincter at the first, but not actually dividing it until the second.

RENAISSANCE OF OTOLOGY

At the first meeting of the Section of Otology of the Royal Society of Medicine, on November 6th, Dr. DOUGLAS GUTHRIE delivered the presidential address on the renaissance of otology.

This movement, he said, had been brought about by such men as Toynbee, Hinton, and Wilde, who were the first to establish otology as an accredited branch of medical science. Otology has been practised for centuries after a fashion, by anatomists and others, but at the beginning of the nineteenth century it was in danger of falling into unscrupulous hands. Dr. Guthrie mentioned some amusing examples of the incompetence of certain "aurists" of the period. Joseph Toynbee (b. 1815), who vowed that he would rescue otology from the hands of quacks, was a man of strong personality and great energy. At the age of 26 he was admitted a Fellow of the Royal Society. One result of his labours may be seen to-day in the Toynbee Collection of some 2,000 specimens in the Royal College of Surgeons Museum. In 1851 he was elected aural surgeon to St. Mary's Hospital, the first great hospital to set aside beds for diseases of the ear. His tragic and early death was the result of an experiment upon himself involving the inhalation of certain vapours to relieve tinnitus. Toynbee was the first to recognize and describe otosclerosis, the first to use the diagnostic tube, the first to show that the Eustachian tube was not constantly patent; and these were only a few results of his researches.

Toynbee's successor, James Hinton, is remembered to-day as a philosopher and the author of *The Mystery of Pain* rather than as an otologist. Nevertheless he made valuable contributions to otology, editing the second edition of Toynbee's book, classifying the Toynbee Collection, and making many original observations. He was an early advocate of incision of the tympanic membrane in acute otitis, he showed that aural polypus grew from the tympanum and not from the meatus, and he may have been the first surgeon in the country to perform the mastoid operation. The third member of the great otological trio was Sir William Wilde of Dublin, the father of Oscar Wilde. He was a man of varied interests, an antiquarian and statistician of repute, an author of distinction, and, above all, a careful clinician. Like Toynbee, whom he admired, he "laboured to divest otology of its shroud of quackery." Although to-day he is chiefly remembered as the originator of "Wilde's incision" for acute mastoiditis, he did much more for otology. His *Aural Surgery* contains many case reports which are models of clear description, and might well be studied in these days of telegraphic case-taking. Much of the work of the pioneers is now obsolete, but their writings still deserve our attention and respect.

Labyrinthine Concussion

Dr. BLEGVAD of Copenhagen read a paper on modern views on concussion of the labyrinth. He said that deafness due to the so-called concussion of the labyrinth is met with in three different circumstances: (1) Cases due to a violent trauma of the ear with fracture of the skull or of the labyrinthine capsule. These cases have been studied clinically and experimentally; the causes of deafness are haemorrhage into the labyrinth, rupture of the membranes, etc., with consequent degeneration of the nerve apparatus. (2) Cases due to trauma of the ear but without any demonstrable fracture of the labyrinthine capsule. Opinions differ about the cause of deafness in these cases. Very few necropsies are recorded and experiments have given different results. Some authors look upon the deafness as being due to a traumatic neurosis, others think there is an organic lesion of the inner ear (haemorrhage, microscopic fissures in the labyrinthine capsule, etc.). (3) Cases in which deafness is caused by strong sounds. There are two different forms of pathogenesis: (*a*) deafness produced by a strong noise for some length of time, well known as boiler-maker's deafness; (*b*) deafness produced by a single very loud sound, sometimes combined with a sudden rise in atmospheric pressure (shot close to the ear, explosion of mines, shells, etc.). Before the war this deafness was said to be due to concussion of the labyrinth, which was thought to be a true organic lesion of the inner ear (haemorrhage, or displacement of the nerve-end apparatus brought about by violent shaking of the labyrinthine fluid, etc.). Experiments on animals gave contradictory results (Wittmack, Siebenmann). During the war many such cases were observed and the prognosis was thought to be very unfavourable. But after the war most of these cases recovered completely, or almost completely. Thus the modern view of these lesions is that the deafness—or hardness of hearing—is not due to an organic lesion of the inner ear, but is a psychogenic one, a form of emotional deafness. The paper was discussed by Mr. LIONEL COLLEDGE, Dr. GAVIN YOUNG, Dr. RITCHIE RODGER, Major DRUMMOND, and others.

INDUSTRIAL MEDICINE

At the quarterly meeting of the Association of Industrial Medical Officers held in the London School of Hygiene on October 30th, under the chairmanship of Dr. N. HOWARD MUMMERY, papers were read by Dr. H. E. COLLIER on "The Education of Medical Practitioners for Industry," and by Dr. G. P. CROWDEN on "Post-graduate Training in the Practice of Preventive Medicine in Industry."

Dr. COLLIER discussed the present methods of teaching employed in the Department of Industrial Hygiene and Medicine of Birmingham University, and outlined his personal views regarding future developments. He spoke of the "functions" which medical practitioners had to perform in and for industry, and arising from that the kind of special medical education that, in his opinion, was required adequately to fit medical practitioners to perform such functions.

In his paper Dr. CROWDEN stressed the fact that much of the training in the D.P.H. course held in the London School of Hygiene was of value to the industrial medical officer. He described how at present such training was carried out, and showed the importance of the industrial aspect of the school's work. In particular, he discussed the subject of physiology as applied to hygiene and industry. He mentioned the daily cycle of life—activity→fatigue→recovery—and showed how the various factors concerned in this cycle affected the health and working capacity of the industrial worker. These factors were: (*a*) activity factor, mental and muscular; (*b*) environmental factor—for example, temperature, humidity, atmospheric pressure, air movement, air change, radiation, noise, vibration, illumination, atmospheric pollution, dust; (*c*) time factor, duration of work spell, rate, and rhythm; (*d*) individual factor—for example, individual make-up and physique, nutrition, personal hygiene, economic circumstances, responsibilities, family, clothing, home environment.

Practical demonstrations were also given by Dr. Crowden, Dr. T. Bedford, and Mr. T. C. Angus.

MEDIASTINAL TUMOURS

At a pathological meeting of the Liverpool Medical Institution held on October 22nd, with the vice-president, Dr. R. E. ROBERTS, in the chair, several interesting pathological specimens were shown, and Dr. T. F. HEWER read a paper on mediastinal tumours.

Dr. Hewer dealt with the post-mortem diagnosis of malignant tumours of the thymus, lymphosarcoma, and the oat-cell type of carcinoma of the bronchus. He said that thymomas could generally be recognized by the presence of a lobulated mass in the thymic region and a tendency to invade the sternum and the axillary and deep cervical lymph nodes. The histological appearance of thymomas was very variable, and could be explained on the basis of the developmental origin of the gland from entodermal epithelium and lymphocytes. A case of pure carcinoma of the thymus was shown in which the differential diagnosis from lymphosarcoma was aided by Foot's silver impregnation of the reticulum. The absence of reticulum, except in the fibrous trabeculae, in such cases

was contrasted with its presence in reticulum-cell lymphosarcoma. It was unfortunate that the term "reticulum cells" was applied to the epithelial cells of the thymus; they were not reticulum cells in the true sense of the word, and contained no reticulum fibres. Mediastinal lymphosarcoma was extremely rare, and it was probable that most cases had their origin in the lymphoid tissue of the thymus. Some undifferentiated cases of bronchogenic carcinoma might closely resemble lymphosarcoma, and it was here that a reticulum stain was of value; there was no reticulum in the main mass of the tumour in bronchogenic carcinoma. It had to be recognized that in some cases of undifferentiated tumours of the mediastinum it was not possible to make a diagnosis on histological grounds. Sections and specimens from several of the tumours under discussion were exhibited.

General Discussion

In the discussion which followed, Dr. R. H. MOLE called attention to the fact that in carcinomata of the bronchus, growth into the mediastinum was always considerably in excess of growth within the tube. In his experience collapse of a large area of the lung was rare; the tumour grew along the lung septa, and the visceral and parietal pleura became very firmly adherent. Mr. J. HOWELL HUGHES said that from the surgical point of view the interest lay in that the neoplasms could be divided into two groups, the operable and the inoperable. The operable included the parenchymal type in which glandular involvement was late, and he wondered whether this was due to a difference in the type of cell or to poor lymphatic drainage as compared with the intrabronchial carcinoma.

Dr. PAPPWORTH questioned the value of histological classification, particularly of bronchogenic carcinomata. It had been said that the histological appearances are of no great interest or importance—the ultimate course of the disease is the same (Davidson: *Diseases of the Chest*, 1935). The varying symptoms and signs depended on the site of the neoplasm and not on its histological structure.

Scotland

Health Services in Scotland

Sir James Leishman, in an address to the Rotary Club at Edinburgh on November 5th, said that the cost of the health services in Scotland was at least £19,000,000 yearly, while that of the public social services was fully £60,000,000. Scotland's population was almost 5,000,000, but it was distributed very unequally with a city like Glasgow containing over 1,000,000 inhabitants and burghs like New Galloway with only 307. The Highlands and Islands area covered half of Scotland with only one-seventeenth of its population, and altogether four-fifths of the people were now in towns as against one-fifth in rural districts. If the present tendency to an old population continued the inhabitants of Scotland in about thirty years would be reduced by nearly a million. The Departmental Committee on Scottish Health Services had thought that the cost of the health services had been justified by results, and that the people of Scotland were substantially healthier to-day than they were formally. It should not be assumed, however, that there were no gaps, for the figures revealed by school medical inspection and rejections of recruits for the forces were highly unsatisfactory. Less emphasis was now laid on heredity, although weak constitutions were possibly deficient in resisting power. An important recommendation of the committee had been that of an extended general practitioner service for promoting the health of the people. Such a service should concentrate much more on prevention than on cure, on health rather than on disease. There was a great need of playing fields for young people. The sooner people awakened to the deficiencies of organization in this matter the better; they should criticize public officials in regard to the organization and treatment that was at present being supplied for the almost unlimited sums of money expended.

New Orthopaedic Ward in Edinburgh Infirmary

Sir Thomas B. Whitson, chairman of the board of managers of the Royal Infirmary of Edinburgh, on November 5th opened an orthopaedic ward in this institution, which has been reconstructed from the ward previously used for skin diseases and now housed in a new building. He said that the opening of this ward marked a new epoch in the study and treatment of disease in the Infirmary. Provision was made for treatment of orthopaedic disabilities in childhood at various centres in Edinburgh, but until now there had been no organized provision for the orthopaedic treatment of adults, for whom this new ward was intended. The number of patients likely to seek treatment there was large, including those who had incurred disabilities during childhood and also those who sustained injuries by accidents of various kinds. Experience had shown that in order to obtain the best results from treating orthopaedic cases it was necessary that the department should be staffed and equipped on special lines. These arrangements would lessen the burden on the ordinary surgical wards, and, it was hoped, would achieve a reduction in the waiting list. After-care of orthopaedic cases was as important as the immediate treatment, and in this new department particular attention would be paid to the system of after-care and follow-up work. It was hoped that the new department would in time form the centre of a more extensive scheme, linking up all the orthopaedic activities of Edinburgh. The speaker further made a plea for co-ordination of all the hospital services in the south-east of Scotland.

Ireland

Free State Medical Registration Council

A meeting of the Medical Registration Council was held on November 3rd in the office of the Council, 35, Upper Fitzwilliam Street, Dublin, with the president, Dr. Denis J. Coffey, in the chair. Among those present were Professor Henry F. Moore and Professor James N. Meenan, representatives of the Executive Council, and the following representative members: Professor Stephen Shea, University College, Galway; Dr. T. G. Moorhead, University of Dublin; Mr. R. Atkinson Stoney, Royal College of Surgeons; Professor J. W. Bigger, Royal College of Physicians; Dr. Edward Magennis, Apothecaries' Hall; and Professor R. J. Rowlette and Mr. William Doolin. The meeting had under consideration reports from the inspector in midwifery to the recent final examinations, also reports from the inspector to the final examinations in dentistry. Among routine business discussed were arrangements to be made in order to bring addresses in the *Register* up to date and for the printing of the *Register* for 1937, the auditor's report for 1935, and general finance. Reports of Committees of the Pharmacopoeia Commission submitted by the Department of Local Government and Public Health were approved.

Ulster Medical Society

The opening meeting of the session was held in the Whitla Medical Institute, Belfast, on October 29th, when the president, Dr. Foster Coates, presided over a large audience. Dr. Coates thanked the Fellows and Members for their support and attendance during the year, referring particularly to the services of the honorary secretary (Dr. F. P. Montgomery), who had ensured the continued success of the society. In presenting his successor, Professor P. T. Crymble, he said that Professor Crymble did not require any introduction to the members as he was so well known as a teacher of anatomy, and latterly as a distinguished occupant of the chair of surgery in the University. After Professor Crymble had been inducted to the chair and invested with the chain of office, he first thanked Dr. Coates for his services during the year of office, and then delivered his presidential address on the surgery of the duodenum. Having outlined the applied

anatomy of the subject, Professor Crymble dealt with the various surgical conditions met with, and proceeded to a consideration of the results of operation on the duodenum in cases of ulcer, with and without pyloric obstruction. Other conditions considered were duodenal obstruction due to developmental defects, megaloduodenum, foreign bodies, duodenal haemorrhage, and malignant growths. The speaker then showed a number of illustrations of pathological conditions and of operative procedures, including radiographs. Colonel T. Sinclair, emeritus professor of surgery, proposed a vote of thanks to the president, and recounted his experiences in performing the first operation of gastro-enterostomy in Ireland. Mr. A. B. Mitchell seconded the vote of thanks, and Dr. Coates conveyed this to Professor Crymble amidst hearty applause.

Tuberculosis in Belfast

The report of the chief tuberculosis officer of the county borough of Belfast for 1935 records a decrease in the number of deaths from this disease. From pulmonary tuberculosis there were 401 deaths, compared with 448 in the previous year; from the non-pulmonary forms of the disease there were 108 as against 122. Of these patients 45 per cent. died within a year of notification. It was to be regretted that so many sufferers from tuberculosis, despite the operation of medical benefit, were apt to delay coming to the doctor until it was too late. The report draws attention to the relative diminution in the number of women patients in the course of twenty-two years. In 1915 the proportion of women to men was 150 to 100; in 1935 it was 95 to 100. This may perhaps be attributable to the hygienic improvement in women's clothing during the post-war years. In one respect the experience of Belfast differs from that of England. In England, despite a general decrease in female mortality from pulmonary tuberculosis, there has been a rise in mortality among young women, aged 15 to 25, in recent years. In Belfast this rise has not occurred, and, indeed, the mortality for the same age period has fallen considerably. Among many instructive statistical tables four relating to home conditions are of special interest. These are based on the information of tuberculosis health visitors, who paid more than 40,000 domiciliary visits during the year. The majority of new cases occurred in houses with four rooms or less; conditions of ventilation and cleanliness were more often bad than good, though the greater number are classified as average. Of 1,190 sufferers only 201 possessed a separate bedroom, 141 shared a room with three others, and eleven with as many as seven others. But the following figures give even more striking evidence of the deplorable economic conditions still persisting in Belfast as elsewhere. Of these 1,190 cases 521 shared a bed with one other person, 257 with two, 59 with three, and 17 with four or more.

England and Wales

Tuberculosis in Lancashire

The Administrative County of Lancashire covers an area of 1,038,130 acres and has a population of 1,821,100. The Council owns or leases twenty-four tuberculosis dispensaries, and owns or rents accommodation at sanatoria or hospitals for 980 beds, of which 734 are at eleven county institutions. Dr. G. Lissant Cox, the central tuberculosis officer, reports that in 1935 the death rate from pulmonary tuberculosis was 0.46 per 1,000 of the population, showing no further reduction since the previous year, when it was the lowest on record. The number of new cases reported (1,340) was, however, the lowest on record—a fall of 52 per cent. since 1918. For non-pulmonary forms both the death rate (0.01) and the number of new cases reported (703) were the lowest on record. The death rate from tuberculosis (all forms) of 0.57 thus compares very favourably with that for England and Wales of 0.71. The number of patients on the tuberculosis register on January 1st, 1936, was 7,404. New contacts examined during the year numbered 977; 51 were diagnosed as tuberculous (48 pulmonary, of which 35 per cent. were sputum-positive), a proportion of 55.61 per 1,000 as against 4.06 tuberculous persons per 1,000 of the population known to the dispensary staff in the county. Thus eighty-eight contacts (forty-three children) were examined per 100 deaths from tuberculosis, as against 138 (eighty-four children) for all counties in England (excluding London), and 173 (ninety-nine children) for England (all areas). On the other hand, the number of *x*-ray examinations at the dispensaries was 960 per 100 deaths, as compared with 321 and 367 for all counties in England (excluding London) and England (all areas) respectively. Dr. Lissant Cox includes a survey of the after-history for five years of 2,734 new cases of tuberculosis reported from all sources in 1930. Patients treated under the tuberculosis scheme numbered 2,056; of the 1,097 with definite pulmonary disease, 63.1 per cent. died from tuberculosis within the five years (39.7 per cent. dying in the first year). He concludes: "This survey emphasizes the importance of prevention. While methods of diagnosis have improved, while new methods of treatment are tried and not without success on individuals, it still remains that the best results in anti-tuberculosis work obtain by detailed, unobtrusive, and continually applied measures for the *prevention* of this disease." The unsatisfactory results of institutional treatment are seen in the figures, which show that of the patients admitted as T.B. + 2 (54 per cent. of the total) 6.1 per cent. were discharged as quiescent; of the T.B. + 1 group (10.1 per cent. of the total) 23.4 per cent.; and even of the T.B. − group (21.5 per cent. of the total) only 34.1 per cent. were discharged as quiescent. It need hardly be added that the outlook on return to home conditions for any but the quiescent cases in the two first-mentioned groups is far from bright. The development of the surgical treatment of pulmonary tuberculosis is seen in the figures of eleven thoracoplasties carried out, the large number of operations on the phrenic nerve (176 with, in some cases, artificial pneumothorax), and the 463 cases of artificial pneumothorax, in which, surprisingly, adhesions were cut only six times.

Certifying Factory Surgeons' Dinner

In his speech opening the new session of Parliament the King said: "The present law regulating the conditions of work in factories is based upon the Act of 1901, and though it has from time to time been modified in certain particulars, further amendment and consolidation are long overdue. My Ministers intend to invite Parliament to undertake and carry through this important task in the course of the present session." At the annual dinner of the Association of Certifying Factory Surgeons (Incorporated), held at the Langham Hotel on November 4th, with the president, Dr. A. Glen Park, in the chair, reference was made to the promised measure by several of the speakers. Dr. M. W. Paterson, in proposing the toast of "The Factory Department of the Home Office," hoped that the scale of fees for certifying factory surgeons would be revised, and looked forward to an amplified service playing an even greater part than at present in maintaining health and preventing disease in industry. H.M. Deputy Chief Inspector of Factories, Mr. G. F. Taylor, in reply spoke warmly of the cordial relations which had always been maintained between the Home Office and the certifying factory surgeons. Dr. J. C. Bridge, Senior Medical Inspector of Factories, in proposing the toast of "The Association of Certifying Factory Surgeons," hoped that the promised Act would appear during the next session, and would come up to the expectations of the association. Sir Thomas Watts, one of the oldest members present, suggested that attention should be paid in drafting any Bill to a practice which he still believed largely responsible for the spread of tuberculosis among textile workers—namely, "shuttle-kissing." Dr. Nightingale proposed briefly the health of the visitors, a toast which was responded to by Dr. G. C. Anderson, Medical Secretary of the British Medical Association, and Sir John Haslam.

Dr. Anderson said that he regarded it as important that an opportunity should be given to the Association of Certifying Factory Surgeons and to the organized medical profession to pass comment and make suggestions with regard to the drafting of such an important measure as that proposed. Throughout the dinner, which was well attended, a lively interest was taken in the promised, and, it was said, long-overdue, legislation.

Lord Horder on the Voluntary Hospital System

The years that have elapsed since local authorities took over the administration of Poor Law institutions under the Local Government Act of 1929 have been notable for the very marked activity on the part of voluntary hospitals. From all over the country has come news of rebuilding, of extensions, and in some instances of completely new institutions. Among the hospitals that have embarked on a programme of extensions must be included the Royal Victoria and West Hants Hospital, Bournemouth. An appeal was made on behalf of the hospital and of the Eventide Homes for £70,000, and as a result of intensive local effort, and, recently, of a gift of £10,000 from a borough resident, Mr. A. C. Maclean, the amount required to complete the fund is now only £18,900. At a dinner in connexion with the appeal, held in the Pavilion, Bournemouth, on November 6th, Lord Horder spoke in praise of the voluntary hospital system. He said that the voluntary system had a vitalizing effect. It stimulated the individual with a sense of responsibility. So with the voluntary hospital it became their affair to see that the enormous organization "ticked over" smoothly. If the voluntary system could not remain efficient through the medium of the units they called hospitals, then it was doomed. The hospital must be efficient in all senses and facile in its approach to the sick person. There were men and women of great experience, both lay and medical, who gave up their time and of their professional capacities to the service of these social units. All that would be lost if the hospitals were mechanized and if the doctors and hospital administrations were put under direct State control. It would also be an enormous loss to the advance of medicine.

CORRESPONDENCE

The number of letters received for publication is so large that we must ask correspondents to make their points briefly and to regard 600 words as the upper limit of length.

Substances Promoting Cell Growth

SIR,—It is most gratifying that my inquiry has evoked from Dr. Needham a detailed and interesting reply (*Journal*, October 31st, p. 892), which makes it clear that we agree on the main points—namely, that the carcinogenic substances do not stimulate the uncontrolled growth of malignant cells—and, further, that whatever it is that confers on the malignant cells the characteristic properties which distinguish them from normal cells resides within the malignant cells themselves. Dr. Needham throws into his reply some new bones of contention. I shall attempt to deal with some of these, again in the hope of removing possible misunderstandings, while leaving one particular point on which I am not competent to argue to be discussed by my colleague Dr. Schlesinger.

It is certainly a remarkable fact that the same substance can act as an "evocator" and as a "carcinogen." It is probable, therefore, that there is a connexion between these two processes. But where Dr. Needham sees only analogies and argues from them for a close connexion, I see also contrasts and can establish only a partial connexion. When a carcinogenic substance is used as an organizer and induces a neural tube, for example, the result is the differentiation of normal embryonic cells from undifferentiated embryonic cells in a place where otherwise they would not appear. The process requires only a short time. The differentiated cells which have been induced are still normal cells, subject to control from without. They are normal cells in the wrong place. When a carcinogenic substance induces malignancy the process takes a long time. The malignant cells may still possess many properties of the tissue in which they appear, have generally (although not necessarily) a tendency to dedifferentiation in form and function, and differ in their biological properties fundamentally from the normal cells from which they have arisen and among which they lie. It is, I think, in this last point that the difference between Dr. Needham's outlook and mine, and I believe that of most other workers in cancer, lies. Dr. Needham writes:

> "I confess, however, that I cannot follow the very sharp distinction drawn by Dr. Cramer between normal and malignant cells, nor do I know what evidence he has that 'one cell or a small group of cells' in the hyperplastic growth produced by a carcinogenic substance 'undergoes a transformation from a normal cell to a malignant cell.' I had thought that our only satisfactory criteria of malignancy were rapid rate of growth and metastasizing tendency, and I do not see how these could be assessed by the inspection of one cell or a small group of cells."

I am more impressed by the dialectic skill of this passage by which the writer tries to reoccupy a position which he has abandoned in the preceding paragraph than by the soundness of the argument. The view that cancer arises from one single cell or a small group of cells, and that there is a sharp dividing line between normal cells and cancer cells is not a personal view of mine but is fairly widely held. It is not possible to give within the scope of this letter the detailed evidence. Dr. Needham himself speaks of the "uncontrolled growth of malignant cells." In the passage quoted above the term "uncontrolled growth" has been changed to "rapid rate of growth." There is no sharp dividing line between cells growing at different rates, but there is surely a sharp dividing line between controlled growth and uncontrolled growth.

Now the term "uncontrolled growth," better still the term "autonomous growth," is a criterion of malignancy; it is, in fact, the criterion. But "rapid rate of growth" is certainly not a criterion of malignancy. There are malignant tumours which grow very slowly and there are malignant tumours which grow very rapidly. But the rate of growth of the embryo in the first half of its development exceeds that of the most rapidly growing tumour. There are malignant tumours which grow so slowly that a female inoculated with a tumour and then covered by a buck will produce more living tissue in the form of litters than by the growth of the tumour. What distinguishes a malignant cell from a normal cell is its freedom from control by the organism to which the normal cell is subjected. Dr. Needham agrees that "whatever it is that drives on the malignant cells to their uncontrolled growth resides within the cells." As a result of this driving power which resides within the cancer cell it grows, either rapidly or slowly, without reference to the physiological needs of the tissue in which it arose and thus destroys the organ in which it lies. Furthermore, the cancer cell does not respect the boundaries set to the growth of the normal cell, and thus destroys the whole organism. If the skin is incised the cells at the edge of the wound grow and regenerate the skin, but without penetrating into the dermis. They respect the boundaries set to the growth of normal skin epithelium. If a skin cell becomes malignant it invades the dermis, metastases result, and the organism dies. It is clear that the apparently slight substitution of rate of growth for

uncontrolled growth alters the aspect of the problem of malignancy. We should, in fact, have to change the accepted conception of cancer in order to accept Dr. Needham's conception as an explanation.

The process of inducing a neural tube in an embryo and that of inducing cancer of the skin differs therefore in this respect. When a neural tube is induced some embryonic cells undergo a change in form and potential function, but they remain normal embryonic cells. There is no call to look for any fundamental change within the cells. The process may be said to be of one phase. When a carcinoma is induced there is first of all a process of growth in the normal cells. This process extends over a considerable period of time during which the cells remain normal, since the hyperplastic tissue returns to normal when the application of the carcinogen is discontinued. After an interval of time the fundamental intracellular change referred to above takes place and malignant cells appear. The process of carcinogenesis presents, therefore, two phases, and the cancerologist is presented with the additional problem of having to account for the intracellular change which has taken place when the application of a carcinogen has rendered a normal cell malignant.

In the process of carcinogenesis it is only the first phase, in which the carcinogen acts on normal cells and produces a hyperplasia, that corresponds to the action of the same carcinogen when it acts in the embryo as an evocator. The second phase, the intracellular change which constitutes malignancy, is a separate phenomenon, for which there is no biological analogy.

The interesting comparison drawn by Dr. Needham between the homoiogenetic induction of successive neural tubes by cell-free extracts of each other and the successive production of the so-called filterable tumours by cell-free extracts appears to me more justifiable, not as an explanation of the formation of malignant cells, but as a possible explanation of the curious and hitherto unexplained limitation of the process of carcinogenesis to exactly the same type of cell as that from which the extract was made. The malignant cell resembles in some respects the embryonic cell, and since one and the same normal tissue may give rise to very different types of malignant cells it is conceivable that the type of malignant cell is determined in a manner similar to that which determines the type of an embryonic cell.

I have emphasized the distinction between the two phases of carcinogenesis in order to make it clear that the two processes *may* be of an entirely different nature. Our knowledge of the mechanism of fertilization of the ovum gives us no information on the mechanism of the subsequent development of the embryo; and the two phases of carcinogenesis may similarly be two processes of an entirely different nature. But Dr. Needham is certainly justified in insisting that they need not necessarily be so, and that the intracellular change may be due to the carcinogenic substance entering into the cell and forming a complex with protein and polysaccharide. *A priori* no conception can be excluded for the explanation of the intracellular change so long as it accounts for the properties of the malignant cells. Whatever conception of this change one may form, whether one attributes it to a virus, a mutation, the formation of such a complex, or of any other chemical substance, it is to be regarded at present only as a working hypothesis to be judged by its heuristic value. I am not competent to discuss the suggestion made by Dr. Needham that certain properties of the agent present in the extracts of certain fowl tumours could be explained better by the existence of this hypothetical carcinogen complex than by the assumption of the virus, and leave this point to my colleague Dr. Schlesinger.

As for the general objection to the virus hypothesis I am puzzled by the almost religious fervour which it has called forth. Dr. Needham says he is not yet convinced of the existence of a living virus in the filterable tumours. But neither are the people who are using the virus hypothesis, or they would not be engaged in testing its validity by devising new experiments. They use it as a working hypothesis, and it would be difficult to deny that by it they have brought to light a number of important facts concerning the biology of the cancer cell, the existence of which might otherwise have remained undisclosed. These will remain as an addition to our knowledge, even if the virus hypothesis should prove eventually to be inadequate or even wrong. I cannot do better to explain the position than by quoting the following passage from a paper by Peyton Rous, one of the leading representatives, and indeed the originator, of this line of research.

"How far should one be led by the assumption that certain tumours may be due to viruses? Only so far as to make tests with these growths. The tumour problem has withstood the most corrosive reasoning. Yet, since what one thinks determines what one does in cancer research, as in all else, it is well to think something, and it may prove worth while to think that one or more tumours of unknown cause are due to viruses."

—I am, etc.,

Imperial Cancer Research Fund, London, Nov. 6th. W. CRAMER.

SIR,—The only remark I have to add concerns the suggestion of Dr. Needham (October 31st, p. 892) to interpret the filterable tumour agents as combinations of a chemical carcinogen with proteins. The chief facts which any interpretation of these agents has to take into account, in addition to their pathogenic properties and reproduction, are (1) their serological behaviour, and (2) their particle size. Elford and Andrewes[1] have found that the agents of the Rous and Fujinami tumour filtrates consist of *uniform* particles of nearly 0.1 μ diameter. Uniformity of this particle size over the whole range of concentration covered by activity titrations cannot be explained by assuming aggregation of the carcinogen-protein complexes or their adsorption by other aggregates or debris, etc. It indicates most strongly that the size value of nearly 0.1 μ is an essential property of the active units, inseparable from their activity. To take these facts into account it is not sufficient to assume loose combinations between a carcinogen, which is reproduced by the cell, and protein, but one has to suppose (1) that the action of the carcinogen changes the protein structure in a way which makes the complexes antigenic to the animal in whose body they were formed; (2) that the complexes form a kind of super-molecules of a molecular weight of a few hundred millions. These super-molecules would then have to be reproduced in interaction with the cells in such a way that their mode of action, their serological specificity, and their size are maintained in infinite series. This description, however, comprises already all essential features—and at the same time the only ones—which all viruses and bacteriophages have in common.—I am, etc.,

Imperial Cancer Research Fund, Nov. 9th. MAX SCHLESINGER.

SIR,—In the diagram accompanying Dr. J. Needham's article in the *Journal* of October 10th (p. 705) we note that carcinogenic compounds are included among the "stimuli of growth," but it has been shown that they have a toxic effect on mesenchymal tissue, and are known to cause cirrhosis and amyloid degeneration. Davidson[2]

[1] *Brit. Journ. Exper. Path.*, 1935, xvi, 61.
[2] Davidson: *Journ. Path and Bact.*, 1925, No. 4, vol. xxviii, 62

found that coal tar applied externally to the ears of rabbits or injected subcutaneously would cause necrosis of liver cells similar to that found in atrophic cirrhosis, and that the regenerated tissue was still susceptible to the "irritant," sometimes producing an adenomatous growth.

Dr. H. E. Annett appeals to us in the *Journal* of November 7th (p. 944) to study the action of carcinogenic agents on the living indifferent mesenchymal formative tissue, out of which all kinds of cells are produced. The toxic effects of carcinogenic hydrocarbons can be demonstrated by a vital test. If fresh soot from the exhaust of a Diesel engine or fresh lamp-black be mixed with freshly gathered citrated blood and the whole kept at body temperature for about an hour, it is then noticed that the monocytes which have attempted to phagocytose the pigment have become disrupted. If, however, volatile hydrocarbons are separated from the pigment by repeated washings of ether, and the chemically pure pigment is now mixed with citrated blood and incubated, the monocytes phagocytose pigment without disruption. The monocyte is held by most haematologists to be the direct descendant of the reticulo-endothelium. Presumably these carcinogenic hydrocarbons have the same toxic effect on the formative mesenchymal tissue when they gain access to the blood and lymph streams and bring about the first sequence in the cancer process—that is, papilloma or adenoma formation—and the consequent local lymphatic obstruction as described by W. Sampson Handley[2] deprives the tissue of the "stimulus of differentiation."

A somewhat similar process involving both stimuli of growth and differentiation takes place in pernicious anaemia where, in the absence of a specific metabolic polypeptide,[3] megaloblasts fail to become normoblasts, and they in turn fail to develop into erythrocytes. We note that the megaloblast bears resemblance to the cancer cell, which is larger than its normal homologue, and that reticulocytosis may be a similar process to mitosis.

Ten years ago we placed the cart before the horse in the aetiology of pernicious anaemia when we looked for hypothetical toxins in the alimentary system, and I venture to suggest that within the next ten years we may follow the conclusions of Bostroem (*Journal*, November 7th, p. 944) and jettison the idea that carcinogenic substances stimulate the growth of *normal* cells. Dr. J. Needham assumes that the chemical carcinogen forms in small amounts an active complex with protein. I believe that this protein enters into all sterol metabolism and may be the differential factor to the cancer cell. Clinical results lead one to believe that we may successfully isolate it from the lymphatic system.—I am, etc.,

Whalley, Lancs, Nov. 9th. TOM G. S. HARKNESS.

Abnormal Growth and the Cancer Problem

SIR,—There is an explanation of the causes and nature of cancer so apposite to the controversial point raised by Dr. Needham's paper that I ask permission to bring it forward. I term it an explanation rather than a solution, because it is based on the assumption that all the facts and deductions necessary for a solution already exist, are indeed in saturated solution. What is needed is not the addition of still more facts, but the introduction of that biological thread, no matter how slender, which shall cause the amorphous fluid to solidify into a definite shape.

Everything centres round the meaning of the pre-cancer cell. It looks like an embryonic cell, and so also does the cancer cell which arises out of it. One of three possible views may be taken of this cell. It may be: (1) inflammatory, (2) regenerative, (3) degenerative. The first is no longer tenable and may be ruled out. The second is now in favour. But why should embryonic, constructional, or progressive cells appear in undamaged tissue in an organ which is finishing its career or is actually effete?

Let us take the third view, and assume that the pre-cancer cell is not regenerative but degenerative; not primitive or embryonic but merely embryonoid. It is, in that event, a cell which has passed through the progressive phase of its cycle of development, has shed most of its acquirements—its complexities of form and function—and has arrived at that stage on its downward phase which corresponds with the embryonic stage of its progress. It is reduced, degenerate, dedifferentiated, but still alive and potentially active, though about to pass on to the last stage—that of molecular dissolution.

But, after all, the final test of the nature of anything is not its appearance, nor its structure, but its response to stimulation—its behaviour. Now we all know that the predecessor of the embryonic cell is the gamete, and that the gamete is the ontogenetic equivalent of the protozoon; that gametes activated by suitable mechanical, chemical, or actinic stimuli are started off on a course of progressive development to reach their highest pitch of elaboration in whatever organ they form a unit, finally again to become simple and to complete their cycle by disintegration into the elements from which they integrated.

Let us now put our embryonoid pre-cancer cell to this same test by subjecting it to one or more of the stimuli above mentioned. As a fact, we are already familiar with this test, and with its results, for we know that wherever there is a pre-cancer cell we are careful that it should not be subjected to the stimulus of a cut, a blow, still less to the repeated impulse of friction, lest the dormant pre-cancer cells should be mechanically activated and started off on a course of endless multiplication. And similarly with such actinic agents as heat, *x* rays, radium; or with such chemical agents as tar, arsenic, or certain disease toxins. For, if we do, we know that, despite all that may be said to the contrary, they are liable to multiply, not constructively as embryonic cells multiply, but on a low protozoan level as a protozoid parasite, with results which are destructive to the organism in which they grow.

If this view is correct, then the new growth—the cancer—which is the outcome of artificial fertilization of pre-cancer cells will be endowed with three sets of qualities. It will have gametoid qualities, derived from its gametic or embryonic origin; protozoid qualities, from the protozoon, the homologue of the embryonic cell; and vestiges of those higher qualities which the cell possessed when at the summit of its development. In varying degree all of these three qualities can be detected in every cancer. The gametoid characters were first studied by Von Hansemann and by Sir John Farmer and his colleagues. The irregular and otherwise puzzling chromosome changes are just such as might be expected of cells of this triplicate nature, and so also is the well-known fact that mere stimulation, even if carried on to irritation, is not enough. The stimulus must be of a selective, fertilizing nature. The difficulty so often experienced in finding the activating agents; the variable and often prolonged latency; the virtual encystments in fibrous tissues; the outbursts of activity; reaction to stimuli; adaptation to circumstances—are all protozoid features. As for the vestigial character of cancer cells, they are too well known to need comment.

I bring this forward not as a complete explanation of all the difficulties that surround the problem of the origin of cancer, but as an explanation of the main or central

[2] Handley, W. Sampson: *The Genesis of Cancer*, 1931.
[3] Dakin and West: *Journ. Biol. Chem.*, 1935, cix, 489.

problem. So far no one among the many competent critics to whom I have submitted it has been able to find any structural flaw, though some have pointed out weaknesses or inaccuracies of detail. To enter into the subject of some of the lesser problems and, above all, that of the origin of cancer from embryonic rests, and that of the nature of the benign tumours, would take up too much space. They admit of very simple explanations on similar lines, and have been dealt with elsewhere.—I am, etc.,

Reading, Nov. 2nd. HASTINGS GILFORD.

Agranulocytosis and Amidopyrine

SIR,—I cannot agree with Dr. S. C. Dyke that amidopyrine and its allies are unlikely to produce agranulocytosis except in "subjects, either male or female, who have passed the 'change of life'" (*British Medical Journal*, November 7th, p. 911). I have seen seven women with agranulocytosis which was attributable to amidopyrine, and while four had passed the menopause the other three were in the twenties. There was no reason to believe that the younger women had suffered any alteration in the nature or balance of their sex hormones.—I am, etc.,

Dunn Laboratories, St. Bartholomew's Hospital and College, Nov. 9th. L. J. WITTS.

Treatment of Carcinoma of the Cervix

SIR,—In the report of the discussion on carcinoma of the cervix that appeared in your issue of November 7th (p. 937) there are certain statements which I would criticize.

Mr. T. F. Todd is reported to have said that among gynaecologists all over the world, except in Vienna, surgery had no place in the treatment of the disease. This is quite untrue. Wertheim's operation continues to be practised by many surgeons in Germany and other parts of the Continent, whilst in America, a stronghold of radium treatment, certain well-known gynaecologists, like Professor Frank Lynch of San Francisco, adhere to it. In Australia H. Schlink has recently reported a series of cases. In this country, besides myself and my associates at Middlesex Hospital, all my colleagues at the Chelsea Hospital for Women perform it. I presume that Mr. Todd would allow that these gentlemen are well-known exponents of gynaecology. I would suggest to Mr. Todd that the making of such misleading statements by advocates of radiological treatment is a mistake: if made in good faith it displays an ignorance; or if with knowledge, a certain unscrupulousness which in either case does not advance the thesis. There are sufficient proved facts in favour of radiological treatment to warrant legitimate advocacy without this sort of stuff.

As Mr. Todd mentioned my name in connexion with the mortality of the operation it will be pertinent to give here my latest figures. I have performed Wertheim's operation 508 times over a period of twenty-nine years and have had seventy deaths following the operation, a mortality of 13.7 per cent. When I began to do it my operative death rate was 20 per cent., but as my experience increased the rate fell. I have had nineteen operative deaths in my last 200 cases, a mortality of 9.5 per cent. I do not know what the operative mortality may be in the case of surgeons whose experience only amounts to one or two operations a year, but it is certain it is very wrong of such persons to perform it at all.

The statement that on the average about forty out of every 100 patients presenting themselves with carcinoma of the cervix already have involvement of the regional glands and hence are beyond the scope of radiological treatment was first made by me. My latest figures support it. Out of my 508 cases the regional glands were proved to be carcinomatous on 202 occasions, or 39.7 per cent. My colleague Comyns Berkeley's figures were similar. The late Archibald Leitch by post-mortem examination of 915 patients dying of the disease untreated gave a gland involvement rate of 38.36 per cent., a figure quoted by Berkeley and me in 1911 in the first edition of our *Gynaecological Surgery*.

I have pointed out before that no comparison can be drawn between the so-called "operable" case of the radiologist and the cases operable by the surgeon. Last year at the Women's Hospital, New York, my friend Dr. Gray Ward asked me to operate on two Class III ("inoperable") cases selected by him and his colleagues. I did so before a number of well-known American gynaecologists and in each case accomplished the operation. The regional glands were free of growth in one patient but carcinomatous in the other. As regards my own results, the percentage of cures I have obtained by operating on every case where there was any hope of removing the growth successfully and submitting the remainder of the patients to radium treatment ranks with the best radiological results and is much better than the general average.

Radiological treatment has two advantages over surgery: first, its very small operative mortality; and, secondly, it enables a certain number of cures to be effected from among the patients who cannot be operated upon. Operative treatment, on the other hand, has two advantages over radiological treatment. First, it enables a certain number of cures to be obtained from among those patients who by reason of involvement of the regional glands are beyond radiological cure. Secondly (and here I endorse very warmly what Dr. Furber said at the meeting), the operated-on patient need never know the nature of her disease. Except for the surgeon's interest there is no point in his ever seeing her again. Cure or recurrence, there is nothing more to be done, and if the latter unfortunately eventuates there is no difficulty in keeping her in merciful ignorance. It is otherwise with radiological treatment. The very mention of radium nowadays brings visions of cancer to the lay mind, and even when it does not the need for frequent inspection forces on the patient's understanding the fact that her state continues precarious and suggests the reason. When recurrence comes and anxiety is first augmented by ebbing hope and finally replaced by dread realization her condition is pitiable.—I am, etc.,

London, W.1, Nov. 9th. VICTOR BONNEY.

Hexamine in Treatment of Biliary Infections

SIR,—I do not wish to prolong the controversy with Mr. C. Jennings Marshall about the use of hexamine in biliary infections, but there are certain statements made by him in his last letter which call for comment. He suggests that the use of the duodenal tube to collect bile for examination is open to question in cases subjected to heavy oral dosage of hexamine; but we never test the effect of treatment until an interval of a week has elapsed since the last dose of hexamine was given. He calls in question "the testimony as to therapeutic efficacy" in cases of infection recovering after six weeks' treatment, because acute diseases like pneumonia may recover rapidly without antiseptics. But I was speaking particularly of chronic cholecystitis, in which the symptoms have generally been present for many months or years; moreover, the symptoms often disappear long before the end of the six weeks' course of treatment, which is continued so as to ensure complete sterilization of the bile passages.

Mr. Jennings Marshall inquires about the treatment of the formalin gastritis occurring in cases receiving heroic doses of hexamine over prolonged periods ; but if hexamine is taken, as it should be, with large doses of alkalis on a full stomach gastritis never occurs.

Finally, it may interest your readers to be reminded of Lord Moynihan's statement that he knew of no treatment started within the last few years which had so greatly reduced the necessity for surgical intervention in any individual disease as massive doses of hexamine in the case of gall-bladder disease.—I am, etc.,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Nov. 7th.

⁂ This correspondence is now closed.—ED., *B.M.J.*

Maternity in its Sociological Aspects

SIR,—I hesitate to trouble you with a single additional word, but it seems necessary to point out, in view of Dr. Manson's letter (*Journal*, November 7th, p. 943), that I have not advocated large families, nor have I deprecated the use of procedures directed towards the convenient spacing of children in families. In my address I referred always to "a widespread propaganda tending to diminish births." My contention in this regard was, and is, that "the widespread propaganda directed towards birth control, sterilization, and the legalization of abortion may lead to disaster, and should be replaced by an educative campaign showing the individual and communal importance and value of motherhood."—I am, etc.,

London, N.W., Nov. 6th. HENRY B. BRACKENBURY.

Sedimentometers

SIR,—We were much interested in the article by Dr. Terence Lee in the *Journal* of October 24th (p. 809) on his sedimentometer. We ourselves have been concerned with the same problem of automatic recording of blood sedimentation rates, but owing to the large number of cases for this test every day in this laboratory our difficulties could only be met by an apparatus capable of recording a number of tubes simultaneously. We have therefore devised and had in use in this laboratory during the past year, with very satisfactory results, an apparatus capable of taking up to eight standard Westergren tubes (but easily adaptable for more) which records photographically.

We are proposing to publish an article on this apparatus very shortly, but the main features may be stated as follows:

1. A rack of standard tubes is traversed by a clock and the image photographed by a fixed focus camera on a half-plate sheet of bromide paper, readings being taken up to three hours or longer.

2. To avoid objectionable warming of the tube by the illuminant the tubes are not enclosed in any way, and the light is shielded by a sloping glass screen. Dr. Gard of Midhurst has shown that heat may be a serious source of error, as it increases the rate.

3. As the number of tubes and the lens action of the small-bore Westergren tube made it difficult to mount them in an opaque screen, the illumination was effected by oblique light against a black background, the plasma fortunately being opalescent and luminous. The apparatus can be used by daylight in the open laboratory.

4. Tubes can be added to the rack at any time up to an hour after the exposure has been started, thus enabling each tube to be set up as the specimen is collected and the batch got through in the minimum of time. When the session is finished the apparatus is completely automatic, and can be left to record the results after the laboratory is closed.

While we seem unconsciously to have been working along the same lines as Dr. Lee, and to have solved some of the difficulties in the same way, we may perhaps be permitted to raise the following questions with regard to his apparatus: (*a*) we question the saving of time effected by the use of a single-tube apparatus, at any rate in laboratory work ; (*b*) we should be interested to know if the difficulty of heating the tube has been overcome in any way ; (*c*) in our experience of rheumatic work a reading of one hour is of little value, at least two hours being essential ; (*d*) while appreciating the fact that the use of wide-bore Cutler tubes is of photographic advantage, we have considered it necessary to use a method (that of Westergren) which has been established as a standard in rheumatic work for a number of years. In point of fact, however, our apparatus is usable with any type of tube.

It is interesting to see how similar problems have led to somewhat similar solutions, and we shall be pleased when our fuller account is published to have Dr. Lee's criticism of our own apparatus.—We are, etc.,

J. W. SHACKLE, M.R.C.S., L.R.C.P.
C. L'ESTRANGE ORME, M.B., B.Ch., M.R.C.P.

British Red Cross Clinic for Rheumatism, London, N.W.1, Nov. 6th.

Sanatorium Treatment for Pleural Effusion

SIR,—As some remarks of mine at a recent meeting of the Royal Society of Medicine when pleural effusions were under discussion seem to have given rise to some misapprehension, I should be obliged if you would allow me to correct the wrong impression conveyed by the use of a phrase which was capable of two interpretations.

It has been suggested that I am opposed to the sanatorium treatment of young persons suffering from pleural effusion. When drawing attention to the comparatively benign nature of pleural effusions not infrequently seen in child contacts I suggested that some of the effusions seen during adolescence were possibly of the same nature. For this reason I deprecated exposing an adolescent, who might be in a hypersensitive condition to tuberculous invasion, to any risk of further infection—for example, by sharing a sanatorium cubicle with a phthisical patient. Though I believe that the prognosis in pleural effusion uncomplicated by parenchymatous disease is much better than is usually supposed, I feel that such patients should receive six months' treatment on sanatorium lines controlled by repeated *x*-ray examination. Such treatment need not necessarily be carried out in a sanatorium, but for the average working-class boy or girl the sanatorium is the only feasible way of securing this. This need not incur the risk of reinfection at close quarters, but in my opinion a measure of segregation from the "bacilliferous case" is desirable.—I am, etc.,

London, W.1, Nov. 7th. W. BURTON WOOD.

Individual Protection for Retired Practitioners

SIR,—It has been a matter of concern for some time to the Council of the Medical Defence Union that year by year practitioners resign their membership at the moment of retirement from active practice, and this in spite of a letter indicating to them that even after retirement they are still liable to attack for alleged misdeeds whilst in practice.

At the annual meeting of the Union, held on September 24th this year, a proposition was put forward that to encourage retiring practitioners to maintain their protection special terms of life membership should be offered them. This general proposal was approved by all those members of the Union present. The Council at its meet-

ing yesterday decided upon the details of this arrangement, which are as follows:

"A member retiring from practice who had belonged to the Union for ten years or less should become a life member upon one payment of three guineas.

"A member for more than ten years but not exceeding fifteen should become a life member upon one payment of two guineas.

"A member of more than fifteen years' standing should become a life member upon one payment of one guinea."

It is of the essence of this arrangement that the protection afforded by this life membership shall be correlated to the period when the member was in practice, and shall cease to hold good should such a retired member re-engage in practice in any form other than a casual attendance dictated by the circumstances of an accident or emergency. If, therefore, a retired life member covered by this arrangement starts practice again it would be necessary for him to be reinstated as an ordinary member by paying the appropriate annual subscription until the time when he again retired, after which his life membership would be resumed without further payment.

Practitioners must appreciate that whilst the Statute of Limitations may be a good defence for actions brought more than six years after the occurrence, considerable expense may be incurred before the moment arrives when the Statute can be pleaded. Our records show many an instance of several years elapsing before an attack is made upon a doctor—in one case as long as twenty-two years.

The above arrangement becomes operative on January 1st, 1937, and will be offered to all those members of the Union who have resigned during 1936 by reason of retirement from practice. It is possible that the arrangement when known will appeal to practitioners who retired prior to 1936. Should they wish to avail themselves of these provisions they will be required to pay such annual subscriptions as will make them continuous members up to and including the year 1936.—I am, etc.,

ERIC PEARCE GOULD,
President, Medical Defence Union.

49, Bedford Square, W.C.1, Nov. 5th.

The Royal College of Surgeons and its Members

SIR,—The letter of Dr. Harold Sanguinetti in your issue of November 7th is a very reasonable and timely reminder to the Members of the Royal College of Surgeons of England, and, indeed, to its Council and Fellows, that once again at the annual meeting at the College on November 19th, among other matters of interest, the question of representation of some Members on its Council will be discussed.

It is now ninety years since the charter was obtained conferring the entire control of the College on the Fellows, then specially created, to the entire exclusion of the Members, who formed the original electorate of the College. From that time till now a continuous and vigorous protest has been made year by year by the Members. For nearly half a century at every annual meeting of the College a resolution of protest and a request for some representation on its Council has been carried by a large majority of the Fellows and Members.

Within the past few years a questionary to Members showed an overwhelming majority of those circularized favourable to this resolution. It must surely be a unique experience that so persistent, moderate, and reasonable a request, made by three successive generations of Members and supported by some of the most eminent of its Fellows and at least by two of its Presidents, should still remain ignored by the Council. The late Lord Moynihan was a supporter of this claim, and on the Council during his presidency a very large number of the Council, though not a majority, were believed to be favourable. Recent questions associated with the medical curriculum—osteopathy, chiropody, diplomas in dietetics, etc.—were before the Council, but no Member in general practice, with first-hand knowledge of the problems, was present to assist the Council and represent the views of the general body of Members.

The relationship of the Council and Fellows *vis-à-vis* the Members is now a happy and friendly one, and the moment eminently suitable for settling this long-standing grievance with advantage to the College and its Fellows and Members and the profession, and indeed the public at large.—I am, etc.,

London, S.W.1, Nov. 9th. REDMOND ROCHE.

A Bureau of Geographical Medicine

SIR,—May I be permitted to applaud the idea of a central bureau of geographical medicine, sketched out by Dr. F. C. Eve in your issue of October 24th (p. 849). Such an institution would offer considerable scope in directions now difficult of access, for research and progress both in the aetiology of disease and in preventive medicine.

My own interest was first directed to this fascinating subject by the illuminating work of Dr. W. F. Petersen of the University of Illinois,[1] whose investigations deal with the response of normal and abnormal individuals to meteorological environment. Then some investigations carried out here indicated that significant differences existed between the blood of British subjects in Iraq and in Britain. The explanation of these differences has not been elucidated, but the facts at present appear to indicate climatic factors as responsible. In connexion with this work I have experienced considerable difficulty in finding literature on haematological standards in different parts of the world, and also in gaining access to the few references obtained. Had a bureau been in existence the collation of such information would have been much easier.

I should like to support Dr. Eve's suggestion that the British Medical Association should start a section of geographical medicine at the annual meetings. From that great things might grow, and an idea become an actuality.—I am, etc.,

WALTER P. KENNEDY.

Physiology Department, Royal College of Medicine, Baghdad, Nov. 3rd.

Control of Small-pox

SIR,—Dr. Billing states (*Journal*, November 7th, p. 947) that the introduction of major small-pox from the East by the *Tuscania* in 1929 was a serious matter. The late Sir George Buchanan, in his address to the Public Health Congress on November 19th, 1934, said:

"Even as late as 1929 the question came to a head by the episode of the ship *Tuscania*, which many of you may remember. For reasons I need not go into, the *Tuscania* landed at British ports forty-five persons actually incubating small-pox of the major type, who developed the disease in this country, nine of them dying from it. Our system of notification of contacts and surveillance was so good that no more than six secondary cases occurred; in other words, the whole group of variola major cases in the country only totalled fifty-three, all duly isolated and controlled."

The *Tuscania* instance shows that even major small-pox could be introduced into a practically unvaccinated country without risk to its inhabitants. Why, then, suggest other inoculations?—I am, etc.,

REGINALD F. E. AUSTIN, Major R.A.M.C. (ret.).

London, W.1, Nov. 10th.

[1] *The Patient and the Weather. Mental and Nervous Diseases.* By W. F. Petersen. Ann Arbor: Edwards Bros., Inc. 1934. (Pp. 375.)

Care of the Sea-sick

SIR,—Having been compelled for my sins to travel some half-million of miles by sea in vessels of various sizes, and having watched and helped to tend scores of sea-sick people, remarks which make light of their misery rather get my goat. The blurred vision and dry throat resulting from the subcutaneous injection of 1/60 of a grain of atropine is a small price to pay for the magical relief it affords in 75 per cent. of cases. At the same time I agree fully in warning travellers against indiscriminate drugging with remedies patent or otherwise.

A fellow-passenger once showed me a box which he said had been given him by a doctor in London. This contained some dozen tubes of tablets labelled "atropine sulphate gr. 1/60." Cases of serious collapse, I fancy, have been not uncommon as sequelae of self-dosage with proprietary remedies. But the utter wretchedness of sea-sickness deserves a great deal more than the offer of a mixture (which the worst sufferers fail to retain) with the pious expression that they will soon be better.

What meaning has "soon" to a sea-sick man?—I am, etc.,

November 8th. F. JUPE.

Traumatic Oedema

SIR,—Dr. L. C. Hill and Mr. W. E. Tucker are at cross-purposes. The former describes four cases of a rare post-traumatic condition which, for want of a better name, has been called "trophic." The persistent local swelling and, skiagraphically, the disuse atrophy affecting the parts distal to the lesion to a much greater extent than can be accounted for by the period of immobilization—and, indeed, occurring without it—are characteristic. Since the cause is some interference with the nervous path controlling nutrition, Dr. Hill is, of course, justified in his contention that treatment by physical means is useless in these particular cases. There is nothing to do but to wait until the nervous mechanism begins to recover, usually at the end of six months, meanwhile preventing the joint from adopting a poor position, if necessary by splintage.

Mr. Tucker, on the other hand, discusses the rationale for his treatment for sprains, etc.; no one would quarrel with his theory or practice, but his comments have no bearing on the treatment of Dr. Hill's patients, whose disabilities were not, in my opinion, due to the common results of tissue injury.—I am, etc.,

London, W.1, Oct. 31st. J. H. CYRIAX.

Blood Pressure in Pituitary Disorders

SIR,—In the article "Variation of Blood Pressure in Diseases of the Hypophysis" in the *Journal* of October 31st (p. 851) Professor G. Marañón and Dr. F. Domenech give a large number of figures recording their estimations of blood pressure, and by way of commentary tell us that the figures "are sufficiently eloquent" to speak for themselves.

Unfortunately there are 138 of their figures which have not been allowed to speak at all. I refer to the figures representing their estimations of the diastolic pressures, which were taken in every case as well as the systolic, but of which in the commentary or the final table no cognizance is taken.

The authors make no mention of the method employed for the estimation of the blood pressures, nor do they give us any idea of the width of the armlets used with their instruments. By my method of estimating the blood pressures two armlets, each two inches wide, are used with the idea of finding out the ratio of the stroke pressure to that on the blood in the artery after the removal of the systolic pressure. This latter pressure gives us the pressure against which the stroke or systolic pressure has to work. By my method the normal ratio of stroke to work is 150/50—that is, 3 to 1—and under which all the parts of the system are adequately supplied with blood. By the auscultatory method of estimating blood pressures the normal ratio of systolic to diastolic is 120/70, or 1.75 to 1, provided a four-inch armlet is used. Let us assume the normal to be from 1.8 to 1. Now if one works out the ratios of the systolic and diastolic pressures as given by Professor Marañón and Dr. Domenech one finds that "high," "normal," and "low" ratio figures speak for themselves, but in quite a different way from that which appears in the article.

Let us take the first two figures which appear as being high in their acromegaly list—namely, 23/10 or 2.3 to 1, and also 19/14, or 1.3 to 1. The former is distinctly above the normal 1.8/1, but the latter is certainly below and therefore "low," and not, as recorded, "high." Applying this method of efficiency ratios the following table gives us quite a different classification and therefore

	Pressure	Classed by Systolic only by Authors	Classed by Ratio of Systolic to Diastolic
Acromegaly	High	5	20
	Normal	36	12
	Low	3	12
Hyperpituitarism	High	3	9
	Normal	29	18
	Low	2	7
Giantism	High	—	4
	Normal	6	1
	Low	—	1
Dwarfism	High	—	5
	Normal	3	2
	Low	8	4
Diabetes insipidus	High	4	5
	Normal	14	13
	Low	2	2
Fröhlich's syndrome	High	1	6
	Normal	11	5
	Low	1	2
Hypophysary cachexia	High	1	2
	Normal	3	2
	Low	—	—
Hypophysary tumour without general symptoms	High	—	1
	Normal	5	3
	Low	1	1

a different significance. With a high-efficiency ratio of 140/70, or, in other words, of 2 to 1, we should expect the parts to be well supplied with blood and therefore that growth was stimulated. Taking the authors' figures we find in Table III, "giantism," that the six ratios are 2, 2.1, 2.6, 1.5, 1.7, and 2—four of which are above the normal 1.8, a result which one would expect; but the authors place not one of the cases in the "high pressure" section. A similar observation applies to the acromegaly table.

The authors have done a large amount of work, and my object in writing is that all your readers may be able to get the right and proper value from them.—I am, etc.,

Swansea, Nov. 1st. G. ARBOUR STEPHENS.

Glands and Gullibility

SIR,—Professor Major Greenwood's words are worth requoting. "Where we are tempted," he says, "to make merry over the gullibility of the public, let us remember that shrewd business men attribute to us a share of the same commercially desirable quality." If this imputation has any basis it looks as if some psychological problem were involved. Is it possible, is it conceivable, that we ourselves are afflicted with the very malady from which

it has been our constant endeavour to liberate our patients? Can it be that we are faced here with simply another case of " Physician, heal thyself "?

I understand that at present a scheme of portentous magnitude is being prepared, whereby the whole of our profession will shortly come on the rates—or, to be more exact, will become a branch of the Civil Service. Now in view of the great expense to which the nation is being put, particularly in the matter of defence—imagine what the immunization of London alone by gas masks against air raids will cost—in view of all this, is it not desirable that, before our profession is finally incorporated into the Higher Bureaucracy, it should be first submitted to a thorough-going process of de-gullibilification? I mean this seriously, for our taxpayers are really becoming perturbed, if not even recalcitrant, at the ever-increasing requisitions of Whitehall, and it would be lamentable if they came to suspect that the supermen who are to work the new National Medical Service were as liable to have their legs pulled as themselves.—I am, etc.,

North Queensferry, Fife, Nov. 7th. A. J. BROCK.

Control of Bilharzia-infected Snails

SIR,—According to the official returns nearly £2,000,000 was spent in locust destruction in the Union of South Africa during the years 1920 to 1934. The cost of the chemical warfare against mosquitos and ticks cannot well be estimated, but its effect on all wild life must have been considerable. Though *Physopsis africana* Krauss and *Planorbis pfeifferi* Krauss are readily recognized and do not require the use of chemicals detrimental to the soil for their destruction, little attention has been paid to their control. The former is the only pond-snail at all commonly infected in the Union, but I have collected both species from tributaries of the Limpopo in the Transvaal and of the Sabi in Southern Rhodesia, from the Usutu in Swaziland, from many rivers along the Natal coast, and as far south as Humansdorp in the Cape. Local authorities can do much to control the pest, but the molluscs breed extensively on native lands, and, where bilharzia infection constitutes a greater problem than either tuberculosis or malaria, assistance is required from the Governments concerned.—I am, etc.,

F. GORDON CAWSTON, M.D.

Durban, South Africa, Oct. 19th.

Treatment of Tetanus

SIR,—I shall be much obliged if you will kindly grant me space to bring to the notice of your readers interested in this very important subject the routine treatment recommended by me in the *Journal* of February 28th, 1931. The units stated therein refer to those of the potent serum. The results of this treatment are marvellous.—I am, etc.,

Le Zoute, Belgium, Oct. 30th. C. C. MURISON.

Recovery from Hodgkin's Disease

SIR,—Several years ago I was attending a typical case of Hodgkin's disease, that of a man aged 40 who, whilst laid up with cervical, axillary, and inguinal glands involved, came into contact with a scarlet fever case and developed a moderately severe attack of this disease. After recovering from the scarlet fever all his symptoms of Hodgkin's disease, including the enlarged glands, disappeared, and he was apparently cured. I was unable to follow up the case owing to the patient disappearing from the district without leaving any trace of his whereabouts.

I have suggested to two or three patients I have since seen that infection with scarlet fever might give them a chance; but I could not obtain their consent—the word " fever " seemed to settle them.

I have written this in case any investigator who is lucky to get his patient's consent might like to try the experiment of scarlet fever infection.—I am, etc.,

Wellington, N.Z., Sept. 24th. C. DAWSON HENRY, M.D.

Obituary

WILLOUGHBY MASON WILLOUGHBY, M.D.

Medical Officer of Health, City of London

We much regret to announce that Dr. W. M. Willoughby, for the past eight years medical officer of health for the City of London, died in St. Bartholomew's Hospital on November 4th.

Dr. Willoughby was born in 1875 at Plymouth, where he spent happy days in his father's engineering works, on the sea, and on his beloved Dartmoor, for which he retained an abiding affection and to which he returned again and again throughout his life. From Plymouth College he went to University College, Bristol, and there obtained a scholarship to Caius College, Cambridge, where in 1897 he graduated B.A. with honours in the Natural Sciences Tripos. Having chosen medicine as a career, he went to St. Bartholomew's Hospital, obtaining the M.B. and B.Ch. degrees in 1900, and proceeding M.D. in 1904, his thesis being entitled " The Site of Pain in Visceral Disease from an Embryological Standpoint." He also took the Cambridge D.P.H. After a short period in general practice in South Wales he joined the staff of the Port of London Sanitary Authority in 1901 as a boarding medical officer at Gravesend. In 1908 he was appointed medical officer in charge of the Port Isolation Hospital, where a great variety of cases came under his care; but perhaps his main concern was the many cases of enteric fever, to which he devoted the closest personal attention and in the treatment of which he was remarkably successful.

He was appointed medical officer of health for the Port of London on the death of Dr. Herbert Williams in 1916, at a time when war conditions made the responsibilities of the position particularly heavy and the work exceptionally strenuous. In the diagnosis of plague and in the treatment of plague-infected ships Dr. Willoughby had perhaps more experience than any medical officer of health in this country, and he had of necessity made a close study of small-pox, in the diagnosis of which he became an expert. When in 1928 he succeeded the late Dr. W. G. Howarth as medical officer of health for the City of London, Dr. Willoughby brought to his duties not only the experience he had gained in the Port of London, but a keen interest in many public health problems in which he had not hitherto been directly concerned. He was by inclination a scientist rather than an administrator, and though his views were sometimes unorthodox they were always supported by carefully reasoned arguments. His leisure was spent very largely in scientific pursuits; in biology until microscopy began to affect his eyes, and then in geology, which he was studying up to the time of his death. Even at his bedside, as he lay dying in St. Bartholomew's Hospital, he had a number of books on this subject and a selection of his most treasured specimens, which he had himself collected and polished.

A quiet, unassuming man, kindly and generous, Dr. Willoughby shunned publicity, and the depth and breadth of his scientific knowledge and the keenness of his intellect were only appreciated by those who had the privilege of close association with him. It was not easy to persuade

him to take the position at scientific meetings to which his ability entitled him, but he did accept the office of president of the Section of Public Medicine at the Annual Meeting of the British Medical Association in Oxford this year. He was ill at the time, but it was characteristic of him that he carried on without letting anyone know of his pain, his weariness, his anxiety. His patience and courage never failed to the end. He leaves a widow and an only son, who, as an assistant medical officer in the Port of London, is following in his father's footsteps. His brother, Dr. George Willoughby, medical officer of health for Eastbourne, was President of the British Medical Association in 1931–2, and he had three brothers-in-law in the medical profession.

Dr. Willoughby will be sadly missed by his many friends in the public health service, and his loss will be particularly deeply felt in the Guildhall of the City of London, where he was held in affectionate esteem by the members of the City Corporation and by the staff of all departments. Apart from his official reports, which always contained interesting material, he published some notes in the *Lancet* and the *Medical Officer*, and read a paper before the Epidemiological Section of the Royal Society of Medicine collating his experience of plague on shipboard. A memorial service was held on November 10th at the Church of St. Bartholomew-the-Less within the precincts of the ancient City hospital of which he was a loyal son.

THOMAS MUIRHEAD MARTIN, M.D.

Dr. Thomas Muirhead Martin died on October 28th, a few days after a major operation from which he never rallied. Born on June 4th, 1869, he was an Edinburgh student of distinction, and qualified M.B., C.M., L.R.C.P. and S.Ed., L.F.P.S.G., in 1892, later taking his Edinburgh M.D. with commendation. He began his medical career with assistantships in Scotland and the English Midlands. In 1896 he took up general practice in Lochwinnoch, Renfrewshire. There his great medical talents were held in high esteem by the country people. Pressure of friends and patients, among whom the writer was one, persuaded him to migrate to London, where in 1907 he soon established himself in a large practice. During the war he was attached to the Ministry of Pensions in the capacity of a Deputy Commissioner of Medical Services (Neurological Section). For ten years before his death he practised as a consulting physician in Harley Street. Always fully occupied, he yet found time to contribute to medical journals on the subjects in which he specialized, among which his "Pocket Notes on Nerves" found ready acceptance amongst his medical brethren. He was a member of the British Medical Association for forty years, and a Fellow of the Royal Society of Medicine. A man of commanding presence and personality, Muirhead Martin brought to the bedside of his patients not only medical skill of the highest quality, but also that indefinable innate something which greatly strengthened and comforted them in their struggle with sickness. His patients all feel that they have lost one who was a physician for both the body and the mind, and one whom they will never replace. He leaves a widow and two sons to mourn his loss. The elder son follows his father's profession.

Dr. J. KENELM REID writes: Just after the war Dr. Muirhead Martin was engaged in administrative work for the Ministry of Pensions. In that sphere he impressed me from the first as a man who did his duty plus a good deal more. His extreme conscientiousness and enthusiasm infected all who were privileged to work with or under him. In after years his name became connected in my mind with one thing above all others—the gratitude of patients. In my long association with him nothing stands out more clearly in memory than the continual good, physical, and especially mental, he did people who asked his help. They were never disappointed. The weight of his zeal and their faith would often burst the door to health and happiness while cold science was fumbling for the key. What better record would any physician wish?

SIR ALFRED BLENKINSOP, K.C.B.

Major-General, Late R.A.M.C.

Major-General Sir Alfred Percy Blenkinsop, K.C.B., late R.A.M.C., died at Little Green, Frensham, Surrey, on November 3rd, aged 71. He was born on June 25th, 1865, the fourth son of Lieut.-Colonel W. Blenkinsop, was educated at King's School, Canterbury, and at University College, London, and took the L.S.A. in 1886 and the M.R.C.S. and L.R.C.P. London in 1887. Entering the Army as surgeon on July 27th, 1887, he got a brevet lieutenant-colonelcy on May 4th, 1910, becoming lieutenant-colonel on January 22nd, 1912, colonel in the long war promotion list of March 1st, 1915, and major-general on January 1st, 1919, retiring on January 10th, 1923. He was subsequently made a colonel-commandant of the R.A.M.C. in September, 1929. He served in the operations in Sierra Leone in 1898–9 (medal with clasp); in the South African War in 1900–2, taking part in the operations in Cape Colony, the Orange River Colony, and the Transvaal, receiving the Queen's medal with three clasps and the King's medal with two clasps; and in the war of 1914–18, when he was mentioned in dispatches in the *London Gazette* of March 12th and August 27th, 1918.

For three years before the war Blenkinsop was Assistant Commandant of the R.A.M.C. College at Millbank. For the first three years of the war he served as Assistant Director-General at the War Office, in 1917–19 as D.D.M.S. in Mesopotamia, and after the war as D.D.M.S. of the Eastern Command till his retirement in 1923. He received the C.B. in 1916, the C.M.G. in 1918, the K.C.B. on June 3rd, 1922, and in 1923 was appointed an honorary surgeon to the King. He was also a Knight of Grace of the Order of St. John of Jerusalem and a Grand Officer of the Crown of Rumania.

He joined the British Medical Association in October, 1887, and was honorary secretary of the Army, Navy, and Ambulance Section at the London meeting of the Association in 1910. After his retirement he represented the R.A.M.C. on the Council of the Association for three years, 1927–9, and was a member of the Naval and Military Committee. In 1919 he married Ada Mary, daughter of the late Colonel P. W. Bannerman, and widow of Lieut.-Colonel C. H. Moore.

The funeral, at St. Mary's, Frensham, on November 6th, was attended by Wing Commander H. M. Stanley Turner, representing the Council of the British Medical Association.

J. F. CROMBIE, D.S.O., M.D.

Dr. John Frank Crombie, D.S.O., who died on October 29th, was born at North Berwick on January 3rd, 1870, the eldest son of the late John Liddle Crombie, M.D. He studied medicine at the University of Edinburgh, graduating M.B., C.M. in 1891, obtaining the D.P.H. in 1897, and proceeding M.D. with commendation in 1906. After holding resident posts at the North Staffordshire Infirmary and the Great Yarmouth Hospital he made several voyages as surgeon to the Royal Mail Steam Packet Company. Crombie served throughout the war in Belgium, France, and Italy, reaching the rank of lieutenant-colonel, R.A.M.C., in the Territorial Army, and was awarded the Territorial Decoration. For his war services he received the D.S.O. and the Médaille des Epidémies (en Vermeil).

He had been a member of the British Medical Association for more than thirty years. After retirement from active professional work he went to live at Farnham. He had practised in North Berwick for many years in partnership with his father, but relinquished general practice on returning from the war and became Deputy Commissioner of Medical Services under the Ministry of Pensions at York. At Farnham he took a very active but unobtrusive part in local affairs.

Dr. W. R. MARTINE writes from Edinburgh: The medical profession is the poorer to-day through the death of Frank Crombie after a long and painful illness. Many have lost a kind and generous friend. A great sufferer as a result of war service he never complained, but was always thinking of what he could do to help someone else. He was of a quiet and unassuming nature, and his friendship was "a possession" to those who knew him well. Manly and upright in all his ways, he had the happy knack of attracting friends. As a general practitioner in North Berwick Dr. Crombie was a man much beloved by rich and poor alike, and his inability to resume practice after the war was a great disappointment to him and to his many friends. On his return from France in 1918 he was a physical wreck. His battalion—8th Royal Scots T.F. Pioneers—with whom he went to France on November 5th, 1914, worshipped him. His home life was singularly happy, and the many visits of the writer to his hospitable home at York, and later at Farnham, leave a happy memory which will not easily be forgotten. A full measure of sympathy goes out to Mrs. Crombie and her children in their great sorrow, also to his sister and brothers. He was an ideal husband and a devoted stepfather.

H. TEMPLE MURSELL, M.B., F.R.C.S.Ed.

Consulting Urological Surgeon, Johannesburg General Hospital

We regret to learn of the death of Mr. Henry Temple Mursell, the well-known South African surgeon, who started the urological department at the Johannesburg General Hospital, where the urological theatre is named after him. He had been seriously ill for some time, and died at Bellevue, Johannesburg, on October 2nd.

He was born in Manchester in 1865, son of the Rev. Arthur Mursell, and from Mill Hill School went to University College, London, continuing his medical studies at the University of Edinburgh, and graduating M.B., C.M.Ed. in 1889. Four years later he obtained the F.R.C.S.Ed. and became M.R.C.S.Eng. and L.R.C.P. Lond. in 1896. After graduation he held resident appointments at Ancoats Hospital, Manchester, Queen's Hospital, Birmingham, and St. Peter's Hospital for Stone, London. He was a civil surgeon during the South African War, receiving the Queen's medal with three clasps; and in 1902 he was given charge of the hospital at Wynberg. At the outbreak of war in 1914, after twelve years' practice in Cape Town, he was appointed colonel in the S.A.M.S., and during three weeks medically examined 10,000 men for service in the South-West African campaign. He was afterwards appointed surgical specialist in charge of No. 1 General Hospital, Wynberg. In 1918 he joined the staff of the Johannesberg General Hospital as honorary surgeon, and, becoming more and more interested in genito-urinary surgery, was appointed senior urological surgeon and lecturer in urology at the Witwatersrand University. For twenty-five years he was colonel of the S.A. Field Ambulance, and at the time of his death was consulting surgeon to the Union Defence Corps. For his war services he received the O.B.E.Mil.

Temple Mursell was an active member of the International Urological Society and took part in its conferences in Rome, Brussels, Madrid, and London. Failing health prevented him from attending the recent conference in Vienna. Among his published writings was an article on "Successful Removal of a Tumour in the Adrenal Gland" which appeared in these columns in 1912; a series papers on fulguration for bladder growths and suprapubic prostatectomy in the *South African Medical Record*. He joined the British Medical Association in 1890, and on a visit to this country in 1933 attended the Annual Meeting in Dublin as representative of the Standerton Division of the Southern Transvaal Branch.

The funeral at Braamfontein Crematorium was attended by the mayor and leading members of the medical profession in Johannesburg. By Mr. Temple Mursell's wish no flowers were sent, but, instead, donations have been forwarded in his name to the Medical Benevolent Fund by the president and members of the Southern Transvaal Branch of the Medical Association of South Africa, the director and staff of the S.A. Institute for Medical Research, and a number of individual friends and colleagues.

Dr. JAMES ANDREW BLAIR, who died on October 19th at Stroud, was formerly a well-known practitioner in Newcastle-upon Tyne. After a successful career in the Medical School of the University of Edinburgh he graduated M.B. and C.M. in 1884, and obtained soon afterwards the diploma of L.R.C.P.Lond. In 1888 he took the B.Sc. degree at Edinburgh, and won the Gunning Alison prize for original studies in public health and sanitary science, and proceeded in 1890 to the M.D., with honours, and the D.Sc. (Public Health). During this period of laboratory work he published papers on the organic analysis of potable waters, and on a new method for the estimation of organic carbon and nitrogen. Dr. Blair then settled in Newcastle, where he built up a large practice, and was very highly respected by patients and colleagues. Some years ago he gave up active work and went to live at The Thrupp, near Stroud, becoming a member of the Gloucestershire Branch of the British Medical Association, which he joined nearly fifty years ago.

The death of Sir HENRY CURTIS-BENNETT, K.C., removes a figure almost as well known in medical circles as in the legal profession. Ever since the day when he took silk in 1919, and even before this, his name had been associated with important medico-legal cases, or criminal cases having a like bearing. He gradually succeeded to the great forensic practice of the late Sir Edward Marshall Hall, and in the last few years there has been practically no case of medico-legal importance with which he was not associated. As an advocate he could be suave in manner, stern or humorous in turn, and all without upsetting his witnesses or imperilling the issue for his clients. He figured in many famous medico-legal cases in the last twenty years, and always put his case fairly before the judge and jury, placing his client's interests in the best possible light. He played an important part in the well-known cases of Ronald True, Armstrong, Mrs. Thompson, the Vaquier case, and many others. He was always seen at his best in motor car cases where the question arose of being under the influence of alcohol. His critical survey of the tests for drunkenness always aroused amusement, and even merriment, in court—to the advantage of his client may it be said. He was a leading advocate in licensing cases. He was a great favourite as an after-dinner speaker, and seemed to have an inexhaustible supply of good stories, many of them deliberately told against himself. He had for many years been one of the principal guests at the annual Buckston Browne Banquet of the Harveian Society of London. The loss is great, his place difficult to fill, and he will be sadly missed, not only by his family and the members of the Bar, but by scores of medical men who were fortunate enough to be numbered among his friends and acquaintances.

W. H. W.
G. DE B. T.

Dr. FRANCIS JOSEPH SADLER, brother of Sir Michael Sadler, died at the age of 69 in the Barnsley Beckett Hospital on November 7th. Dr. Sadler was educated at Rugby and Wadham College, Oxford, taking the M.A. in 1893, the M.B., B.Ch. in 1894, and the D.P.H. in 1895, proceeding finally to the M.D. in 1911. He was honorary physician to the hospital in which he died, medical officer of health for Barnsley, and a certifying factory surgeon. He had been president of the Sheffield Medico-Chirurgical Society, and was the author of several papers on the treatment of enteric fever. He had been a member of the British Medical Association for thirty-five years. His death closes more than a century of continuous service to Barnsley by three generations of doctors in the Sadler family. From the foundation of the Barnsley Hospital in 1861 there has always been a Dr. Sadler on the list of honorary physicians and surgeons: first the grandfather, then the father, both named Michael Thomas, and finally the son. His grandfather (1801–72) settled in Barnsley on the advice of his uncle (also named Michael Thomas Sadler), who was the well-known social reformer and M.P. for Newark. His father (1834–1923) devoted much time during many years to extending and improving secondary education in his native town. Dr. Francis Sadler succeeded his father as president of the Lady Harriet Wentworth Charity. He had a deep belief in the value of art for an industrial community, and was a trustee of the Cooper Art Gallery at Barnsley. In youth and early manhood he was a noted athlete, and throughout life maintained his enthusiasm for Rugby football, regularly attending the matches of the local club, of which he was president.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week completed the debate on the Address in reply to the Speech from the Throne. Much of this debate was about health, nutrition, and physical training. The House of Lords had voted the Address and, on November 10th, Lord Mount Temple initiated a discussion there on physical fitness.

The second reading of the Voluntary Euthanasia (Legalization) Bill in the House of Lords is set down for December 1st.

In the House of Lords on November 10th the Earl of Feversham presented a Bill to prevent the spreading of disease among salmon and fresh-water fish in Great Britain. The Bill was read a first time.

In the House of Commons on November 10th Mr. Elliot introduced the Maternity Services (Scotland) Bill, to make further provision with respect to maternity services in Scotland, to amend the Midwives (Scotland) Act, 1915, and to provide for the combination of local authorities for certain purposes under the Notification of Births (Extension) Act, 1915. The Bill was read a first time.

Sir Ernest Graham-Little, who was successful in the ballot for leave to bring in motions, gave notice that on November 11th he would call attention to the conditions of natives in East Africa; and move that funds and personnel should immediately be provided sufficient to inaugurate a research into the causes of native backwardness, mental and physical, in territories under British rule in East Africa, the investigation to be conducted on the lines suggested in resolutions unanimously passed by two meetings of the combined East African Branches of the British Medical Association in January, 1934, and May, 1936.

The National Health Insurance (Medical Benefit) Regulations, 1936, were presented to the House of Commons on November 6th.

On November 6th Sir Ernest Graham-Little presented the Medical Practitioners' Communications (Privilege) Bill—"to provide that certain communications between medical practitioners and their patients shall be privileged from disclosure in evidence in courts of law." It is supported by Mr. Rostron Duckworth, Vice-Admiral Taylor, Mr. Bossom, and Mr. Ammon. On the same day Vice-Admiral Taylor presented the Registration and Regulation of Osteopaths Bill; Mr. Thomas Henderson the Prohibition of Vivisection on Dogs (Scotland) Bill; Mr. Mainwaring the Workmen's Compensation Bill; and Mr. Rostron Duckworth the Deaf Children (School Attendance) Bill.

The Parliamentary Medical Committee is summoned to meet on November 17th. On November 24th the Committee will entertain Lord Dawson to dinner to mark his elevation to a viscountcy.

The Conservative Health and Housing Committee arranged to meet at the House of Commons on November 11th to discuss the programme of the Session. It is proposed that in alternate weeks this committee should hold meetings about the promotion of physical fitness.

Debate on the Address

THE NATION'S HEALTH PROBLEMS

The debate on the Address in reply to the King's Speech was continued on November 4th. Mr. A. V. ALEXANDER said that the Labour Opposition welcomed the fact that the Government at last recognized serious deterioration in the physical standard of the people. This discovery had been made through finding that the recruits available for the Army were not up to standard. Parliament could have no better evidence of the way in which the physical condition of the people had deteriorated. The interim report of the League of Nations on nutrition made references to the British situation which must cause reflection. It said that in the United Kingdom the diet of at least 50 per cent. of the population fell short of the desirable standard, and that to raise the consumption of this half of the population to the level of the next group would require a 16 per cent. increase in the milk consumed, 15 per cent. in the butter, 18 per cent. in the eggs, 12 per cent. in the meat, and a 25 per cent. increase of expenditure on fruits and vegetables. Even then the diet would leave room for considerable improvement. The report said that the reduction in retail prices of food had been accompanied by greater reduction in income of many classes, leading to malnutrition. Sir FRANCIS ACLAND welcomed the promise in the King's Speech of medical care for young persons who had left school and entered employment. As chairman of the Dental Board he was in touch with one aspect of the question. A boy leaving school at 14 and entering directly into employment could not receive help from his approved society to have his teeth seen to until he was 18½. Children left school, as a rule, with their teeth in good condition, but during the critical gap of four and a half years they tended to neglect their teeth.

Mr. GEORGE GRIFFITHS said that during the last Parliament a committee was appointed to go into the question of nystagmus. It had sat for eighteen months. He was disappointed at the evidence given before the Safety in Mines Commission on November 3rd by an official of the Mines Department concerning nystagmus. Once the miner was afflicted by nystagmus he was told that he could not work underground again. The colliery companies were instructed by insurance companies not to employ these men. At the end of 1935 8,376 miners in this country were suffering from the disease. He had met few men who had had nystagmus and had not been mentally and physically affected. He knew three or four cases in which invalided men had so suffered mentally that they had made away with themselves. Yet the King's Speech did not contain anything with the view to remedying that kind of injustice.

PHYSICAL CONDITION OF RECRUITS

Mr. TOM JOHNSTON said that in the last seventy years twenty years had been added to the life of the average male child, and many diseases had gone or were going. Nevertheless, he and his friends had been compelled to bombard the Government during the last session with figures and statistics

showing there was at present a steady deterioration in health. In Lancashire, in the last four days of September, thirty-six men of an average age of 20 presented themselves for recruitment; thirteen had to be rejected at sight for physical weakness and the other twenty-three were rejected immediately as physically unfit by the medical officer before whom they were taken. Mr. Johnston commented that thirty-six out of thirty-six were refused because of underfeeding, poverty, and starvation. Lord Horder, in his presidential address to the Royal Medical Society at Edinburgh in October, said the position was appallingly simple. Lord Horder said it was no good telling people to drink more milk if they could not get it. Every investigator had proved that 10 per cent. or more of the population was living below the minimum standard of the British Medical Association. In Coventry, where firms were building munition factories, Englishmen, Welshmen, and Scotsmen could not be secured who were able to do the labouring work, and in the last eighteen months six hundred new entrants had been imported from the Irish Free State. Mr. Elliot, as Secretary of State for Scotland, had more to do than even his English colleagues in England. The death rate was higher in Scotland, and last year its sickness rate went up 16 per cent. It had 300,000 houses in the burghs without separate water closets. Scottish maternal mortality was 50 per cent. worse than in England, infant mortality 25 per cent. worse, and Army recruiting figures 6 per cent. worse. Did the Government propose this session to give babies and infants under 5 the same facilities for cheap and free milk as they had given to children from 5 to 14? When children entered school at the age of 5 96 per cent. had bad teeth, and every medical authority declared this was due to the absence of vitamin A because of the absence of the necessary milk.

Ill-health and Over-eating

Sir Francis Fremantle said Mr. Johnston was supported to a large extent in his statements of the condition and lack of fitness of the population. As a medical officer of health Sir Francis could say so, but he held that Mr. Johnston's argument went astray. Mr. Johnston had talked of dental decay being due to lack of vitamins. The amount of dental caries was large in well-to-do schools where there had been no lack of vitamins in the diet. One of the main causes of dental decay was the amount of sugar and sweets consumed even by poor members of the population. It was right to show the hiatus between existing conditions and the perfection at which all aimed, but to imagine that hiatus was due to the iniquities of the Government or of the medical profession was absurd. At the same time it was serious when they found a large number of defects in those who came up for recruitment. It had been said, especially in the recent writings of Dr. M'Gonigle and others, that these defects were due to poverty, but that could not be proved so easily. A large amount of ill-health was caused by over-eating even among those who were hard put to it to find enough food to eat, or else caused by bad eating and bad choice of food. If every child was given a pint of milk daily out of Government resources mischief would be done. Because of State provision, less was provided by bad or careless parents at home.

Medical Education in Health Matters

The education of the body had been brought slowly into the compulsory State school system in the United Kingdom in the form of recreative exercises and occasionally of drills. Those who took an interest in it found that improvement of the body accompanied improved mental powers. There should be provision for education of the body among the elderly as well as the young. If questions of physical development were to have a real part in the public health work of this country the medical men and women must play a considerable part. But the ordinary medical education was based upon disease, and entirely upon those who came to hospitals diseased and sick. Physical fitness was the development of the healthy, and the healthy did not go to see the doctor. The work of medical officers of health brought them into touch with healthy life; it was their job to keep people healthy. That side of the profession needed to be encouraged and strengthened, above all in the medical schools, by turning out doctors who thought of health rather than of disease as their main function. That would come under the General Medical Council, and the General Medical Council required revision. At the present moment it was constituted practically entirely of physicians and surgeons in the hospitals and medical schools. Rearrangement and reorganization of the General Medical Council was required to include, not only other kinds of medical men, but also a large infusion of the lay element.

The debate on the Address continued on November 5th and 6th. On the latter day Mr. Arthur Greenwood returned to the theme of nutrition and health.

Opposition Amendment

Mr. Greenwood moved an amendment to the Address. This amendment regretted that the Government, while acknowledging a deterioration in the physical fitness of the nation, due mainly to unemployment, low wages, and consequent malnutrition, continued to enforce the means test and had no proposals for fundamental changes in the basis of society. Mr. Greenwood said attempts were made to belittle evidence of malnutrition. The British Medical Association had set up a Committee on Nutrition, and had worked out in detail a diet to which it attached prices. The Labour Opposition had checked these figures in many parts of the country, and found that the food set out in the Association's dietary could not be bought for the money suggested. In any case the Association's estimate of the cost of food alone in a family of husband, wife, and three children was 22s. 6d. per week. Sir John Orr estimated that an expenditure of 10s. per adult person was necessary weekly on food alone, but that 4,500,000 persons in this country could not spend more than 4s. per week per head on food, and 9,000,000 could not spend more than 8s. per head per week. If that were so malnutrition must exist. It was not a case of spending money badly or of bad cooking. It was the stark fact that there was not enough money, and the Government's contribution to solve this problem was physical exercise. There would be no permanent improvement in the national physique as the result of exercising distorted and stunted bodies.

Government's Health Policy Restated

Sir Kingsley Wood said the Opposition amendment alleged deterioration in the physical condition, not of certain sections of the community nor in some parts of the country, but of the country as a whole. That was untrue. This was not a C3 nation. National health was improving, not merely steadily, but remarkably. The latest figures furnished by the Registrar-General showed a death rate of 11.7 per 1,000 of the population, and that the expectation of life at birth had increased by seven years during the last twenty years. The maternal mortality per 1,000 live births was 57 last year, the lowest on record and compared with 74 even in 1929. The Government meant to achieve still greater results.

Physical Training

One of the best signs of the times was the growing appreciation of the value to citizens of right ways of living, eating, and clothing, and of the increased health of body and mind to be obtained from physical exercises and education. Members should study the report of a committee of the British Medical Association, which gave much patient thought to the physical condition of the nation. That committee said that 40 per cent. of the population between the ages of 14 and 40 needed but did not participate adequately in physical recreational training. The Government, before presenting its plans in this connexion, was consulting men and women in the voluntary organizations, in the municipalities, and also medical men who had done good work in this important field. The House would have full opportunity further to discuss the matter, as it would be necessary to obtain Parliamentary approval for some of the Government's proposals. There had been and would be no slackening in developing and improving the public health services. He agreed that fitness was based on maternity and child welfare. There were already 1,500 ante-natal clinics in England, and more than 100 in Wales. Under the Acts lately placed on the Statute Book the country would have next July a service to enable any mother to be provided with a salaried midwife. Nearly 500,000 slum dwellers had now gone into better dwellings, and they were going now at the rate of 6,000

weekly. Since 1918 3,000,000 new houses had been built in this country, and others were being built now at the rate of 300,000 a year.

NUTRITION INVESTIGATIONS

The question of sound nourishment and of what constituted a well-balanced diet was engaging the attention of many experts in this and other countries. The expert Advisory Committee dealing with the matter was going on steadily with inquiries into diet and into the state of nutrition of the population. A number of quantitative dietary surveys had now been undertaken, the cost of which would be borne by the Ministry of Labour. The collection of family budgets, which was part of that Ministry's investigation of the cost of living, would provide much useful information about diet. Examination was being made into the means of increasing consumption of milk under schemes now in operation. There was no medical divergence on the value of milk, and he awaited the report of the Milk Reorganization Commission on steps to be taken to extend the scope of the milk scheme.

Mr. OLIVER STANLEY said that as Minister of Education he held it grotesque to describe the physical condition of this country as having deteriorated. Any medical officer of health and any man who knew about the health of school children would say that in a generation the improved condition of children had showed itself in an increase in height and an increase in weight. In Jarrow, which the Opposition claimed to be the most distressed place, the average height of the school children had risen in twenty years by nearly 1½ inches, and their weight by 8½ pounds.

The debate was adjourned.

On November 9th the debate continued. Mr. ERNEST BROWN and Sir JOHN SIMON replied for the Government and Mr. HERBERT MORRISON for the Opposition. Mr. Greenwood's amendment was defeated by 369 votes to 125.

Voluntary Euthanasia Bill

In the House of Lords, on November 4th, Lord PONSONBY presented the Voluntary Euthanasia (Legalization) Bill, to regularize in certain conditions the administration of euthanasia to persons desiring it who were suffering from illness of a fatal and incurable character involving severe pain.

The Bill was read a first time.

The Bill provides for the administration of euthanasia by a medical man in the presence of an official witness, if permission has been granted. The conditions for the granting of such permission, in addition to the character of the illness, are that the patient must not be less than 21 years of age, and must be of sound mind; must make out an application in writing in the presence of two witnesses; and the application must be forwarded to a euthanasia referee appointed by the Minister of Health, together with two medical certificates, one signed by the patient's practitioner and the other by a medical practitioner having special qualifications. A referee, before granting permission to receive euthanasia, must satisfy himself by means of a personal interview with the patient and otherwise that the prescribed conditions have been fulfilled and that the patient fully understands the nature and purpose of the application.

Industrial Diseases: Medical Advice for Claimant

Captain W. F. STRICKLAND asked, on November 5th, whether in cases of poisoning resultant on industrial occupation the claimant for compensation was required, before undergoing official medical examination, to indicate in medical terms on an official form the exact type of poisoning from which he claimed to be suffering and for which he desired to be examined; and whether the Home Secretary would consider such alteration of procedure as would ensure that claimants should receive the benefit of medical opinion before having to fill in the form in such technical terms. Mr. GEOFFREY LLOYD replied that a workman who thought he suffered from one of the scheduled industrial diseases could, and generally did, consult his own medical adviser. In a case of difficulty he could apply for assistance to his approved society, which was in a position to obtain a further medical opinion. Mr. Lloyd had no information to suggest that these arrangements were not sufficient.

Special Committee on Maternal Mortality

Sir KINGSLEY WOOD told Sir Francis Fremantle, on November 5th, that he had not received the report of the Committee on Areas of High Maternal Mortality. He hoped it would be completed by the end of the year. The report would be made available to the House, and steps taken to give it publicity.

Unregistered Nursing Homes

Sir FRANCIS FREMANTLE, on November 5th, asked if the Minister of Health was aware of nursing homes still unregistered under the 1927 Act; and what steps he was taking to ensure the closure of unregistered, and the proper conduct of registered, nursing homes. Sir Francis asserted that thousands of nursing homes were unregistered and many others registered but not properly supervised. Sir KINGSLEY WOOD replied that he had recently issued a circular to local supervising authorities on this subject. Action would rest with the authorities concerned.

Dr. J. W. LEECH asked whether the Minister was taking, in collaboration with the London County Council or with the metropolitan borough councils, suitable steps to ensure that the furnishings of rooms in private nursing homes in the metropolitan area were always sterilized after the rooms had been vacated by a patient. Sir KINGSLEY WOOD said the supervision of nursing homes in London was the responsibility of the London County Council. He would communicate with it on this matter.

Physical Training: House of Lords Debate

In the House of Lords, on November 10th, Lord MOUNT TEMPLE asked the Government what steps they proposed to take to improve the physical fitness of the young people of this country. Lord DAWSON OF PENN said it would be wrong to say that this was a deteriorating nation, but in our midst were the seeds of deterioration. We had ignored definite warnings, and consequently the question had become urgent. As the result of our civilization we were preventing the deaths of the unfit, but we had not planned any active adequate substitute. There was only one adequate substitute, and it was to promote the fit on the one hand, and see to it that we took care of the inherently unfit and prevented them from vitiating the race. We had to plan actively for a fit race, and that must actuate all our policy. Why should we not use measures to prevent the birth of children who were not wanted, who were a misery to themselves, and damaging to the race? The medical profession should be exempted from the terms of the ancient law against maiming, and its powers of preventive treatment extended to such cases where it was asked, and where it was right to proceed.

Lord HORDER spoke in supplement to, and not in substitution of, Lord Dawson's ideal. As one who was anxious to avoid delay, he said, "Look after the accessibility of food, and nutrition will look after itself." The question of food and distribution was not a matter for one Ministry, but several, and he would like to see co-operation in this respect between the Ministries of Health, Agriculture, and Transport, and the Board of Trade. EARL DE LA WARR said that the Government intended to mobilize voluntary effort, plus the local authorities, and help and encourage them to give greater facilities for greater health. The basis of the scheme would rest on local authorities and existing voluntary authorities.

Ratification of Drug Convention.—On November 9th Lord CRANBORNE informed Mr. Rhys Davies that the Government proposed to ask Parliament to ratify the drug convention resulting from the meeting of the League of Nations this year.

Notes in Brief

A committee of the League of Nations is endeavouring to secure standardization in the recording of road accidents.

The number of persons in receipt of pensions granted for disablement or death resulting from war service before August 4th, 1914, is approximately 6,250, and the value of these pensions is about £320,000 per annum

Medico-Legal

MENTAL PATIENTS ON LICENCE

A distressing case, heard by Mr. Justice Finlay at Lancaster Assizes on October 21st, suggested some of the shortcomings of the present system of allowing mental patients out on licence.

A male patient of 28 pleaded guilty to the attempted murder of a middle-aged married lady who had befriended him. He had called at her house and asked for a cup of tea, and had then struck her on the head with a piece of wood, inflicting very severe wounds from which she nearly died. He was a high-grade feeble-minded case who had been sent to a mental institution in 1927 for robbery with violence, and had escaped from another institution for a short time last year. The medical superintendent of the institution from which he had been released on licence last June described him at the trial as a mental defective under the category of a moral defective, a person of violent and dangerous propensities on whom punishment had no effect and who was subject to uncontrolled impulses and should not be at liberty. The judge remarked that it was unfortunate the patient was let out, and the medical superintendent replied that he was not responsible for the granting of this licence, and that any two managers of the institution could sit down and write an order of release irrespective of any advice they got from the medical staff. The judge expressed the opinion that the medical staff should be consulted, and that their advice should be followed in all but quite exceptional cases. He ordered the prisoner to be detained at another institution.

It would not be proper to draw inferences from the short report of the case, for which we are indebted to the *Manchester Guardian* of October 22nd, except to observe that the present system allows tragedies of this kind to happen, and that in all probability if the judge's advice were strictly carried out they would be practically unknown.

Universities and Colleges

UNIVERSITY OF OXFORD

Lord Nuffield's Gift

Lord Nuffield's munificent gift of £1,250,000 to the University of Oxford for medical research was announced in the *Journals* of October 17th (p. 770) and of October 24th (p. 822). A decree giving legislative effect to the donor's wishes has been published in the *University Gazette*, and will come before Congregation on November 24th, when the Chancellor, Lord Halifax, is expected to preside and the Vice-Chancellor, Mr. A. D. Lindsay, Master of Balliol, will introduce the preamble to the decree. Lord Nuffield's offer to the University is an annual payment of £192,307 14s., payable half-yearly for six and a half years. The decree prescribes the method of appointment of trustees to administer the trust fund, the constitution and duties of a committee to prepare and submit a scheme to the trustees before January 1st, 1937, and the appointment of staff. For the purposes of the scheme the following Nuffield chairs are to be created: a professorship of clinical medicine; a professorship of surgery; a professorship of obstetrics and gynaecology; and a professorship of anaesthetics. Further eponymous professors or readers may be appointed later. The four professors to be appointed as soon as practicable are to receive each a salary of £2,000 a year out of the income of the trust fund, which will also pay their superannuation contributions; but the University may increase a salary by statute. No professor shall retain office after the age of 60 unless the Visitation Board grants an extension of not more than five years. He must not engage in private practice, except that he may receive fees from patients attended at the hospitals associated with the Oxford School of Medicine. Under the scheme which the committee is to draw up for the development of the school, facilities are to be provided for training post-graduates in methods of research and for similar instruction of students reading for the B.M. degree.

The electors to the George Eastman Visiting Professorship have appointed Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research, New York, as visiting professor for the academic year 1937-8.

UNIVERSITY OF CAMBRIDGE

The Regius Professor of Physic has, with the approval of the General Board, appointed J. F. Brock, M.A., of Trinity Hall, to be Assistant Director of Research in Medicine for five years from October 1st, 1936.

J. S. Baxter, M.B., B.Ch.Belf., has been appointed University Demonstrator in the Department of Anatomy for three years from October 1st, 1936.

UNIVERSITY OF LONDON

Appointments

The Senate has appointed Viscount Dawson of Penn to be a Governor of the London School of Economics, and Sir William Collins to be a Member of the Royal Sanitary Institute and Sanitary Inspectors' Examination Joint Board.

Mr. Charles Horace Gray has been appointed to the Graham Scholarship in Pathology for two years from September 1st, in the place of Mr. J. C. Thomas, resigned.

Lectures

A course of three lectures on "The Ovarian Hormones" will be given by Dr. George W. Corner, professor of anatomy in the University of Rochester, U.S.A., at Guy's Hospital Medical School on December 7th, 8th, and 9th, at 5.30 p.m. At the first lecture the chair will be taken by Professor E. C. Dodds.

London School of Hygiene and Tropical Medicine

Part-time Course in Mental Deficiency

The London School of Hygiene and Tropical Medicine, in co-operation with the Central Association for Mental Welfare, will hold a part-time course in mental deficiency in February and March, 1937. The course will last four weeks, and both lectures and practical demonstrations will be held in the afternoons. A limited number of places will be available for assistant school medical officers employed by local authorities. The course, the fee for which is £6 6s., is designed to enable medical practitioners to qualify for recognition as certifying officers, so far as elementary school children are concerned, under the Mental Deficiency Acts.

UNIVERSITY OF MANCHESTER

The following candidate has been approved at the examination indicated:

Diploma in Public Health.—*Part II:* Edith A. Longson.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Lectures

The Bradshaw Lecture on "The Early Diagnosis and the Treatment of Renal Tuberculosis" will be delivered by Mr. Hugh Lett in the theatre of the College on Thursday, December 3rd, at 5 p.m., and the Thomas Vicary Lecture on "Salernitan Surgery in the Twelfth Century" by Dr. George W. Corner, professor of anatomy in the University of Rochester, U.S.A., on Thursday, December 10th, at 5 p.m. Fellows and Members of the College are invited to attend both lectures. Students and others who are not Fellows or Members of the College will be admitted on presenting their private visiting cards.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS

At the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on November 2nd, the following officers were elected: *President*, Professor Archibald Young; *Visitor*, Dr. John Henderson; *Honorary Treasurer*, Mr. J. H. MacDonald; *Honorary Librarian*, Dr. W. R. Snodgrass; *Representative on the General Medical Council*, Mr. G. H. Edington. Examiners were appointed for the Fellowship and for the Licence.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At the monthly business meeting of the College, held on November 6th, the following candidates, who had passed the Final Professional Examination under the conjoint scheme with the Royal College of Surgeons in Ireland, were duly admitted Licentiates in Medicine and Midwifery of the College:

Annie G. G. Rea-Clarke, Victoria P. McCall-Coffey, J. B. Duffy, C. A. Erskine, W. D. Eustace, J. A. Farrell, Rebecca I. Keith, P. G. Kennedy, A. M. Kinsella, H. L. Laing, I. F. S. Mackay, I. I. Magee, F. J. Manning, J. G. Mathews, E. G. Morris, W. O'Dwyer, Mary A. B. Robinson.

Medical News

The Honorary Fellowship of the American College of Surgeons has been conferred on Sir James Walton, surgeon to the London Hospital, and Professor William Fletcher Shaw of Manchester.

A Chadwick Public Lecture, entitled "The Doctor's Mandate in Parliament," will be delivered by Sir Francis Fremantle in the Great Hall of British Medical Association House, Tavistock Square, W.C., on Tuesday, November 24th, at 5.15 p.m., with Sir James Crichton-Browne, F.R.S., in the chair.

Dr. Edward Mellanby, F.R.S., will deliver a lecture on "Recent Advances in the Treatment of Disease," at the Royal Institution, 21, Albemarle Street, W., on Friday, November 27th, at 9 p.m.

A dinner will take place at the Hyde Park Hotel, Knightsbridge, S.W., on November 24th, at 8 p.m., when the president of the British Science Guild, Lord Melchett, will preside. A presentation will be made to Sir Richard Gregory, Bt., LL.D., D.Sc., F.R.S., chairman of the Council of Management, in recognition of his eminent services to science generally and to the British Science Guild in particular.

The annual dinner of King's College Hospital Past and Present Students was held at the May Fair Hotel on October 24th. Mr. H. A. T. Fairbank, F.R.C.S., was in the chair, and proposed the health of "The Hospital and Medical School," which was responded to by the dean, Dr. J. A. Drake. "The Chairman's Health" was proposed by Dr. G. F. Still.

A sessional meeting of the Royal Sanitary Institute will be held at the Winter Gardens, Margate, on Friday, November 27th, at 5 p.m., when there will be discussions on "The Role of the Health Department on Carrying Out the Air Raid Precautions Regulations," to be opened by Major H. S. Blackmore of the Air Raid Precautions Department of the Home Office, and on "The Accredited Milk Scheme in Kent," to be opened by Mr. G. H. Garrad.

A meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, November 18th, at 5.30 p.m., when Mr. J. E. Barnard, F.R.S., and Mr. F. V. Welch will read a paper on "Microscopy with Ultra-violet Light: A Simplification of Method."

A meeting of the Society of Radiotherapists of Great Britain and Ireland will be held at 11, Chandos Street, W., on Friday, December 4th, at 4.30 p.m., when there will be a discussion on "The Intensity Factor in Radiation," to be opened by Drs. Spear, Mayneord, McWhirter, and Fulton, and Mr. Stanford Cade and Professor Russ.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, November 26th, at 8.30 p.m., when a paper will be read by Dr. W. G. Barnard on "The Medico-Legal Institute."

At a meeting of the French Academy of Medicine on October 27th grave concern was expressed with regard to the future supply of "crin de Florence" from Spain. Hitherto this material for sutures and ligatures has been obtained solely from Spain, and only from a limited area where the peasants cultivate silkworms of a special breed. The silk thus obtained is prepared locally. At present none of it is coming into France, and the supply for 1937 is already seriously compromised. It is anticipated that it will be difficult to obtain such silk in France in another five or six months.

At the meeting of the Central Midwives Board for England and Wales on November 5th the draft of the annual report on the work of the Board for the year ended March 31st, 1936, was considered and approved, and the secretary was instructed to send a copy to the Minister of Health.

A severe epidemic of bubonic plague has recently broken out in the Tucuman Province of the Argentine, the principal focus being Mache.

The new *x*-ray clinic attached to the Margaret Street Hospital for Diseases of the Chest was officially opened by the Marchioness of Titchfield on November 4th. Before the ceremony Dr. F. Hernaman-Johnson, radiologist in charge of the clinic, described the work to be carried out there and referred to the arrangements for private patients. An inspection of the hospital concluded the proceedings.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin).

QUERIES AND ANSWERS

Resection of Ileo-caecal Valve

"B. Q." writes: Fifteen years ago, as a result of appendix abscess, a portion of gut was resected, including the ileo-caecal valve. Persistent diarrhoea has been the result ever since. Apart from the inconvenience, it results in burning discomfort in the large bowel when contents of small bowel are hurried into it, with a sensation of spasm (*x*-rays show this). More or less frequent periods of extreme prostration with dyspnoea and irregular heart beat due to toxaemia are the most troublesome feature. I have never heard of, or met with, a case of resection of ileo-caecal valve. Any observations or suggestions from colleagues would be welcome.

Nocturnal Cramp

"T. P." writes: Referring to "Alpha's" communication in the *Journal* of October 24th (p. 850), might the "error" suggested be an Fe deficiency? There seems to be a relation between the iron intake and protein digestion, whether gastric or pancreatic, according to some of my observations, where this deficiency has been noted in several members of a family, though with different consequences. The aggravation caused by excessive carbohydrates may be occasioned by a functional hepatic insufficiency. Where hexamine or acetylsalicylic acid may act as a corrective Crookes's "ferrofax" seems to be an easily assimilable preparation in these cases.

"74" writes: If the cause of cramp in "Alpha" is the same as mine he will get immediate relief from the muscular spasm by emptying his bladder, no matter how small the contents of it may be.

Income Tax

Obsolescence of Car

"J. H. A.'s" transactions have been as follows:

1920 bought car A for £575
1926 sold A for £5 and bought car B for £375
1932 sold B for £10 and bought car C for £198
1936 sold C for £40 and bought car D for £220

Depreciation has not been claimed, but an "obsolescence" allowance of £188 was made in 1932. The cars have been of similar grade and power.

*** The obsolescence allowance due in respect of car C in 1936 is £198 − £40 = £158. The 1932 allowance was apparently calculated on a "renewal" basis. The "obsolescence" allowance in respect of car B due in 1932 would

be £375 - £10 = £365, and we suggest that "J. H. A." might point out to the inspector of taxes that he is still within the six years' time limit for the correction of errors, and that he asks for an adjustment of his liability for the year concerned. The older and higher car costs do not influence the effect of the present transaction, and this case illustrates, what we have pointed out in the past—namely, that failure to claim the depreciation allowance often involves the practitioner in loss.

LETTERS, NOTES, ETC.

The British Legion Fund

The 1935 Poppy Day appeal of Earl Haig's British Legion Fund realized the gross total of £527,302. This exceeded the appeal of 1934 by £21,674, and the previous record collection of 1930 by about £3,000. The bulk of the money is allocated to the Benevolent Department of the British Legion, but grants are also made to the Officers' Benevolent Department, Preston Hall, and the British Legion Poppy Factory at Richmond. In addition, £20,000 is given to the Prince of Wales's British Legion Pension Fund, and St. Dunstan's receives an annual grant of £15,000. Occasional grants are also made to other societies which help ex-service men; during the last financial year these grants numbered seventeen, and the total so distributed was £4,870. A small fixed percentage of the net income of the British Legion Fund is applied for the purposes of the General Fund, which finances the work of the Legion, including its Pensions, Disablement, and Employment Departments. The Poppy Day report for 1935 comprises details of the activities thus forwarded. In spite of the better statutory allowances now available for unemployed persons, cases of emergency among ex-service men are not infrequent, and in the year under review £61,923 was devoted to men and their families suffering from acute illnesses. Help was also given to sufferers from chronic diseases from time to time, particularly during the autumn and winter seasons, when aid is most desired. Dental treatment was provided for 1,526 cases at a cost of £4,331. Loans and grants were made to 904 cases to assist in the establishment of new small businesses, and £3,879 was employed in promoting schemes for the employment of ex-service men in varied other remunerative activities. A new scheme of assistance came into being in 1935, in which provision was made for the fatherless children whose mothers had had to undergo treatment in hospitals, and for the maintenance of total orphans of school age. It has been possible to assist twenty-five ex-service men and their families to emigrate to the Dominions. The total amount administered by the Benevolent Department during 1935 was £465,874. During the two years ended September 30th, 1935, 880 patients were admitted to the British Legion Village; 681 were discharged, of whom 429 were definitely improved. The average number of patients in residence is about 400, the highest figure reached since the British Legion took over the charge of Preston Hall in 1925. The surgical treatment of pulmonary tuberculosis has made outstanding advances there, and the radiographical equipment has been much improved.

Public Health Congress

A Public Health Congress and Exhibition is to be held at the Royal Agricultural Hall, Islington, next week from November 16th to 21st. It will be opened by Sir Kingsley Wood, Minister of Health, and on the first afternoon an address on "The Rise of the Medical Officer of Health" will be given by Sir Arthur MacNalty, Chief Medical Officer to the Ministry. The sessions on succeeding days and in different sections will be devoted to discussions, among other subjects, on the welfare of mothers and pre-school children, recreational physical training for adolescents and adults, occupation as a therapeutic and educational agent, problems of institutional administration with special reference to voluntary hospitals, and the past, present, and future of the municipal hospital. One day (Friday) is to be devoted chiefly to mental health, when papers will be read on such subjects as the organization of recreations and amusements in mental hospitals, the therapeutic value in mental illness of physical fitness through exercise, and the extension of holiday provision for working patients in mental hospitals. One paper to be read in another section on the Friday is on air raid precautions so far as they affect the departments of the municipal and county engineer and cleansing superintendent, by the city engineer of Sheffield (Mr. R. Nicholas). The exhibition will be generally devoted to equipment for the public health services. The arrangement of the event is in the hands of an organizing council presided over by Sir Frederick J. Willis and including representatives of the Ministry of Health and Board of Control, the County Councils Association and Association of Municipal Corporations, and other national bodies interested in local government.

Relief of Spanish Distress

The following letter, signed by Lord FITZALAN OF DERWENT, Lord HOWARD OF PENRITH, and Mr. A. HUNGERFORD POLLEN, has been received for publication: The Catholic Bishops' Committee for the Relief of Spanish Distress (president, the Archbishop of Westminster) recently appealed for funds to assist the refugees and children rendered destitute and orphaned by the civil war in Spain, and to mitigate the suffering of the wounded of both sides now in the care of the Burgos authorities. We have since learnt that the case of the wounded is the more poignant, for the reason that drugs, medical comforts, etc., are almost unobtainable. The generous response to our first appeal has enabled us to acquire, fully equip, and dispatch a motor ambulance, auxiliary lorry, tent, operating instruments, anaesthetics, antiseptics, etc., and we have funds to maintain this unit in the field for some time. But many more, and more completely equipped, units, as well as blankets and woollen clothes, are urgently needed. We have secured that everything sent out will be administered with Red Cross impartiality. The state of the wounded is appalling; and we cannot believe that our fellow-countrymen, whatever their creed, can be indifferent to the call of mercy. We therefore beg them, irrespective of faith or party, to help us to assuage the appalling miseries of these war victims. All subscriptions, large or small, will be gratefully received and acknowledged by the Honorary Treasurer, National Bank Ltd., 21, Grosvenor Gardens, S.W.1.

Autumn in Sweden

Professor I. WALKER HALL, M.D., writes: Advice is often sought as to the suitability and facilities of foreign resorts by those who wish to winter abroad. It may be of assistance to indicate, therefore, that the terrain and climate of the southern part of Sweden offer certain advantages to rheumatic, bronchitic, arteriosclerotic, and neurasthenic patients. There are several resorts to which a practitioner may send his inquiries with every confidence. One with which I am well acquainted is Tyringe. It is set in the midst of pine and birch forests, 500 feet above sea-level, with air that is unusually dry and ozonic, and soil that is sandy. There is an excellent hotel-sanatorium, replete with baths and all medical accessories. The resident physician speaks English. The food is varied and attractive. Vegetarian, diabetic, and special diets are available. The staff is most efficient, both medical and general. As I happen to be staying here for a time I shall be glad to reply to any practitioner who may wish for further independent information.

p-Aminobenzenesulphonamide

Evans Sons Lescher and Webb Ltd. (56, Hanover Street, Liverpool) write: Although supplies of this drug have actually been prepared by us sufficient data regarding clinical application have not yet been accumulated to justify its introduction into common practice. While clinical trials have so far been encouraging, the uses, dosage, and possible dangers of the product are not yet fully determined. At the moment, therefore, it is undesirable to administer the drug indiscriminately, but small supplies are available for the use of the medical profession for trial on proved cases of haemolytic streptococcal infection, and will be issued free of charge on request, subject to it being agreed that the practitioners concerned will take the necessary steps to ensure the presence of haemolytic streptococci in the case, prior to the institution of treatment, and will undertake to supply full particulars to the Medical Director, Evans Biological Institute, Runcorn, Cheshire.

Corrigendum

We have to correct an error in last week's *Supplement*. In our vacancies column the London Hospital was incorrectly stated to have advertised for a house-surgeon.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 53, 54, 55, 56, 57, 60, and 61 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 58 and 59.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 267.